3. CYCLE THREE - ACTION RESEARCH, RELEVANCE, RIGOUR, VALIDITY

The three papers which follow are intended to help you to strengthen the relevance, rigour and validity of your data gathering and your research reports. In moving from enquiry to research the shift in emphasis is the development of a systematic enquiry which is made public and can withstand tests of relevance, rigour and validity. The first paper looks at an analysis of data gathered in the Science Departments of Dorcan School and Wootton Bassett Schools in 1975. In one set of data a teacher experiences a contradiction between his beliefs and practice. Another set of data shows three girls learning how to set up a controlled experiment to test their hypotheses and a teacher reflecting upon the quality of the pupils' learning. The analysis was first published in the British Journal of In-service Education in 1977. Action Research studies in the past have been open to criticism that they lack rigour. Richard Winter (1990), in his excellent book, Learning from Experience, sets out six principles which can be used by action researchers to strengthen the rigour of their research. The second paper shows how Peggy Kok, an MEd student for the 1990/91 academic year, applied Winter's principles of rigour to her report.

The third paper shows the operation of a validation group in testing the validity of a teacher researcher's claim to educational knowledge. This paper is taken from Martin Forest's (1983) MEd dissertation. Martin was examining his own effectiveness as an in-service tutor in helping primary school teachers to improve the quality of pupils' learning about the use of historical artefacts. In the first report he presented to the validation group he was asked to strengthen the data in relation to his claim that he was being effective in helping the teachers to improve their pupils' learning. The paper presents the conversations which Martin found helpful in moving his enquiry forward and in strenthening the validity of his next report.

3.1 IMPROVING LEARNING IN SCHOOLS - AN IN-SERVICE PROBLEM

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A central function of in-service education is to improve educational standards within schools. There are, however, few case studies which show how particular forms of in-service support have influenced improvements in classroom practice. The case study below describes how the in-service support from Bath University Science Centre influenced improvements in learning for 11-14 year olds in mixed ability science groups.

The Form of In-Service Support

In February 1974 the following form of in-service support was offered to science teachers from Bath University Science Centre.

"If four or more members of a department wish to move towards enquiry learning a tutor will attend weekly or fortnightly meetings at a school to plan syllabuses and participate in the production of resources. For schools with one or two members of staff interested in specific curriculum changes we will organise meetings with teachers from three or four schools. We also hope to develop an evaluation service with you. this will entail video taping, interviews, and practical problem solving situations with each other and the pupils".

Bulletin No. 1, Bath University Science and Technology Centre.

This form of in-service education was based upon the following assumptions

1) Teachers could isolate the problems they experienced when they were not living their intentions in practice.

2) Within the science teachers' intentions was a view of scientific thinking which accepted that asking questions was a necessary component of this type of thinking.

3) Teachers needed easy access to resources which would help solve their problems.

4) Teachers could evaluate the contradictions between intentions and practice when presented with objective evidence. Evaluate, that is, in terms of the relations involved in the transformation of intentions into practice.

1. **Isolating the Problems**

In February 1974, a group of 6 science teachers from 3 comprehensive schools discussed their problems with a lecturer from the Bath Science Centre and committed themselves to work together to design, produce, organise and evaluate enquiry learning situations for 11-14 year olds in mixed ability groups.

The lecturer taped conversations with the teachers in which they explored their intentions, what they were doing in practice and what they could do about the differences, with the following results.

A) **The Teachers' Intentions**

The teachers intended to establish a learning situation in which the pupils gained an understanding of science, as a body of knowledge, a way of solving problems and a creative activity in which knowledge was generated. In relation to science as a creative activity they intended to create an atmosphere in which the pupils experienced freedom, trust and security to express and pursue personally and socially valued scientific enquiries.

B) **The Teachers Classroom Practice**

In practice, the teachers found themselves attempting to convey the same scientific body of knowledge to pupils of different abilities at the same time. They were aware of addressing the middle ability group and "missing" the more and less able. They were conscious that the relations or resources which would give the pupils the opportunity to pursue their own scientific enquiries did not exist.

C) **What could be done?**

At a meeting in March 1974 the teachers agreed that the most urgent problem was the design and production of independent learning resources. These resources would allow the pupils to work at different rates with some degree of freedom, choice and independence. The account which follows, describes how a network of in-service support has evolved, between educational institutions, in response to the teachers' problems. This network involves giving the teachers access to the resources of:

1) The Schools Council, Wiltshire LEA and Bath University.

2) The Association for Science Education and Independent Learning in Science.

3) The Avon Resources for Learning Unit.

4) The Department of Education and Science.

This account is followed by examples of how a particular process of evaluation influenced improvements in teachers' and pupils' practice.

II **Access to Resources**

(1) The Schools Council, Wiltshire LEA and Bath University.

By the end of April 1974 it was obvious to the group that the increasing need for paper, duplicating equipment, secretarial, teacher and lecturers' time could not be met within informal procedures. As the Schools council had expressed its commitment to support local curriculum development projects, £6000 was requested for teacher secondment, resources and reprographic assistance.

The initial draft proposal was drawn up by the lecturer and submitted by him to the Council with a letter of support from the C.E.O. of Wiltshire LEA. The Head of the School of Education at Bath University agreed with LEA officials that the lecturer should direct the project on a one day a week secondment.

The process of formalising the in-service procedures nearly resulted in the abandonment of the project. When the procedures were informal, and improvements resulted from personal commitment rather than institutional role expectations, the teachers worked co-operatively, yet critically, in secure and trusting relations.

As the procedures began to be formalised, LEA advisors came to watch rather than participate and the teachers became so uneasy that productive activity nearly stopped between June '74 and January '75. In January 1975, however, the Schools Council formalised its support and other teachers began to attend meetings and share their resources. A second group of teachers formed in Salisbury in April 1975 in the same way that the Swindon group formed in February '74. This process of growth has continued.

(2) The Association for Science Education and Independent Learning in Science (ILIS)

Between September-December 1973 the members of Independent Learning in Science contributed copies of their resources to the Science Centre at Bath. These resources were extremely valuable in stimulating the teachers' imagination to see ways of improving standards in their mixed ability science groups. This resource collection has been used extensively by science teachers in the area and the decision of the Association for Science Education to form a joint ASE/ILIS collection of Resources for mixed ability teaching, has made the resource collection at Bath University the most comprehensive in the Country.

(3) The Avon Resources for Learning Development Unit (RFLDU)

This Unit is a teachers' co-operative, planned, managed and operated by teachers for teachers. The aim is to produce an organisation to promote independent resource based learning in secondary schools, by making available a wider selection of resources than teachers could hope to produce individually for themselves. The Science Editor of the Unit has, from September 1975, played an active part in the Swindon and Salisbury groups, helping with design problems and producing workbooks of very high graphic design and reprographic quality.

(4) The Department of Education and Science.

Financial support from the Schools Council finishes in august '76. In order for the work to continue the local inspectors of the DES have accepted in principle that they will finance a one year in-service course of some 80 hours duration entitled "Improving learning for 11-14 year olds in mixed ability science groups". This course is based on the formation of working groups of teachers in a similar process to that described above. Of crucial importance to the form of in-service support offered, to teachers, from Bath University, was the creation of the process of evaluation described below.

III **The Process of Evaluation**

The process of evaluation was based on the third assumption above that teachers could evaluate the contradictions between their intentions and practice when presented with objective evidence. When the first drafts of the workbooks were produced by individual teachers they were criticised and modified. The materials were typed onto Gestetner Skins in the Science Centre and class sets were reproduced in each school for trial. The lecturer visited schools once a fortnight to observe the classrooms and to video tape and interview the pupils and teachers. The video tapes were viewed immediately after the lessons or at the next meeting of the working group. Transcripts of the interviews on the teachers' intentions and pupils' interpretations were given back to the teachers within a fortnight.

The following example illustrates how the process of evaluation provided a basis for improvement for Roger Barrow, a science teacher in Wootton Bassett School.

A) STATEMENT OF INTENTIONS

Roger: Well, I was concerned with the fact that most of myteaching was being pitched in the middle of the ability range and I wasn't really catering for individuals. I also had the problem of designing courses for teachers who are not specialists in particular fields. In the first instance I feel we must produce good work schemes which increase the teachers and pupils confidence. When we have built up our understanding of this situation we can then move on to the second phase of responding to the learners questions.

Jack: You see the vital thing is getting the kids to ask questions?

Roger: I'm not sure everybody agrees. I feel that so much of what has happened in Science Teaching has been a dull simulation, jumping through hoops at the appropriate moment at the command of the teacher or the examiner. I've come to realise over a period of time that we were chaining any creativeness and inventiveness in science. I know someone has to work through all the permutations and combinations but I think we have got to open out the possibilities for originality. I think so much of what we do in science is forced on us by exam syllabuses and kills all expression of opinion or development of ideas.

Jack: I can see what you are getting at but I'm curious how you came to these ideas and how you are going to create the situation to make it possible for your pupils.

Roger: I came from a very rigid grammar school where I was very dissatisfied with what was happening. I went into the comprehensive system with the hope that I would find greater freedom and a greater concentration on the needs of the individual. The first step is creating the learning situation I believe in was to move over to this more individual approach because then you can respond to the kids and if they ask a question you can say, "go on and try it".

Jack: Have I understood, when you are face to face with your pupils you are struggling in your relationship with them to help them be creative in the sense that they can ask questions and you must try and show them resources which can help in their enquiries.

Roger: Yes, that's right. The individual teacher is a vital part of the process. Recently we had four teachers on the same scheme. I suppose because I had a large hand in writing the scheme I somehow got a better relationship with my class. I don't know what it is but it's a different relationship to some of the others who were struggling with the materials.

B) Pupils' Responses

(i) One of Roger's pupils was interviewed by Jack Whitehead:

Jack: What kind of things did you do yourself?

Paul: Well, we got all the apparatus and put it up ourselves and poured in the mixtures ourselves and we did, Mr Barrow just helped us a little bit, if we were stuck.

Jack: Really, yes. Did you ask any questions about the way you were doing this?

Paul: No.

Jack: You didn't. You just did it?

Paul: Yes.

Jack: But where did you get your ideas from then, if it didn't come from you?

Paul: Well, Mr Barrow had a little talk with us in the beginning and then he got all our stuff out for us and we put it up and we went to go and get it and then we did our experiments.

Jack: I see. As you were doing the experiments did you have any ideas of your own that you wanted to test?

Paul: No.

Jack: I see. And if you've got questions of your own, like when I put that in front of you, you said, you know, I've tried to separate it, is that because when you're given substances like this, you were told how to separate it or not?

Paul: Mr. Barrow helped us a little bit.

Jack: Yes.

Paul: And he told us if we were doing things wrong. If we did we started again.

Jack: Yes. The thing I want to try to find out is do you have any ideas of your own that you'd really like to think about and test out.

Paul: No, not really.

Jack: You don't?

Paul: No.

Jack: What do think scientists do? Do you think all their problems are always given to them or do you think that some scientists really try to think out ideas of their own.

Paul: Yes.

Jack: Which one do you think?

Paul: That they try to think it out themselves. Trying to make things that can help people, medicines or something.

(II) **Roger interviewed his own pupils.**

Roger: You remember that, and you had to try to save water yourself didn't you? Yes?

Tracey: Yes.

Roger: Well, what did you do it stop to evaporating away?

Tracey: We put a dish on the top of a beaker with water in it and put ice in it.

Roger: Oh, yes. Why did you get that idea?

Tracey: I'm not quite sure.

Roger: You're not quite sure. Did you see other people

Tracey: No

Roger: Or did you work it out for yourself?

Tracey: No.

Roger: How did you get it then? You just don't remember.

Tracey: You told me.

Roger: I told you! Deary me. That's the second person who's said I told them, been splitting obviously. What was the ice doing then?

This process of evaluation has highlighted to Roger Barrow the gap between his intentions and his actual classroom practice. Roger modifies his approach with the following result.

Roger: Now what I want to do is just ask you one or two questions about what we've been doing in science this term. First of all what did you do, what were you expecting when you discovered that you'd got science on your timetable? Did you have any idea what you would do?

Boy: No, not much. Well, some that we did in our other school was very different.

Roger: I see, what was different about it?

Boy: Well, it was more set, you know, they did more for you instead of now you have to do more for yourself.

Roger: You feel you've had to do more for yourself?

Boy: Yes.

Roger: Have you enjoyed doing more for yourself?

Boy: Yes. It's the independence of it . . .

Roger: The independence of it you enjoy?

Boy: Yes. Discovering the actual thing with nobody telling you what's going to happen.

Roger: You really enjoyed that did you?

Boy: Yes, that's what I like about it.

Roger: You like that? Oh splendid.

Finally, Roger Barrow attempts, in dialogue, to make sense of his experiences.

Jack: How far do you think that the basic ideas that we are working with are feasible?

Roger:Well, I think the questions pupils ask fall into three categories, there are those who are asking a shallow, trivial question for the sake of asking a question, or because sir said they were to think about some questions on the topic; there are those who ask a question quite seriously but are totally lacking in the ability to follow through their question with any sort of mature thought about it because the questions they've asked require some kind of thought and therefore they need guidance. This is where they need a resource, something you can put into their hand, at least to start them. This is the biggest problem with any project, getting them going. Once you've started the lesson off, or particularly the project overall off, then one can spend time in individual groups, one can help them. Now the third group asks serious questions and are capable of following them through, like Ian and Gary with that plastic stuff. They were capable of a very mature level of thinking and the way they faced up to the problems they met en route was exceedingly encouraging.

This example shows how the evaluation process has helped a teacher to appreciate the varying reactions of children to learning situations, and therefore to a modification of his behaviour in a direction which is most likely to lead to the practical realisation of his intentions.

The above form of in-service support for teachers has been described in terms of the teachers problems, access to the resources of different institutions and a process of self-evaluation. The claim that this form of in-

service support has influenced improvements in practice is based on the following evidence. This evidence clearly demonstrates how learning has actually taken place within a classroom where the children were working on a series of experiments highly structured by worksheets. The majority of the class could continue their activities with a minimum of supervision from the teacher. This allowed the teacher the opportunity of fulfilling the role of "consultant, advisor or tutor".

It allowed the process of self-evaluation to occur in dialogue between a teacher and small groups of learners.

Four second year girls were measuring the acidity or alkalinity of a metal oxide by adding drops of indicator (a green liquid) into a mixture of the powder and water. One pair obtained an orangy-red liquid indicating an acid and the other pair obtained a blue liquid indicating an alkali. They went to the teacher, formulated their problem, "we got different colours" and received permission to continue work to solve their problem.

By the end of a double lesson they succeeded, after three failures involving highly creative work, to obtain the same blue colour indicating that the metaloxide is alkaline.

Teacher: What was important about what you were doing?

Tracey: It's just that, well, when we got different answers, we couldn't see why we got different answers and so we wanted to get them so that they were the same.

Judith: We were excited . . . It would have been better if we'd had longer.

Teacher: I mean, why was what you did so valuable? What was it's value to you?

Judith: I suppose it was our own little discovery.

Denise: We achieved something . . . we don't normally get so interested in lessons, but this time we just got interested because we wanted to find out the answer to it.

Teacher: Was it the answer, the so-called answer that was important or was it something else?

Tracey: Well, we was very pleased when we got the right answer, but I don't know . . . well, every other experiment that I do is normally a complete flop and, well, this one seemed to be going quite well and so I got really interested in it.

Teacher: But for someone coming into the room, your experiment would have seemed *more* of a flop than the normal. Do you understand that? They would have seen one of you with a blue colour and one of you with an orange colour and said 'well something has gone wrong . . . do it again . . . it's not right'. In fact it would have seemed a complete flop.

Tracey: Well, it came out of a . . . well, it wasn't exactly a flop, but it was more or less, but the reason was . . . it started off with a flop and we got it to a good experiment. Well, I thought it was.

Teacher: What do you feel you created in this room?

Sandra: Noise!!!

Judith: I suppose, you know, the atmosphere was, we were just more excited after it didn't work twice, so, you know, we just kinda, well when the teacher come into the room and saw it was a flop, I don't think I could have seen it as a flop, because it was, you know, just a discovery which you wanted to take further. So if they saw it as a flop then I can't see why.

And subsequently:-

Judith: Well, I suppose really it was that we were doing an experiment off our own bats, and it working was the most important thing because it was our achievement and not prompted by the teacher and it wasn't what everybody else was doing, so it was different and so we enjoyed it more than we would have before.

Teacher: Are there any questions that you want to ask me?

Judith: Well, in the next lesson, can we carry on?

Sandra: Yes, 'cos we didn't find out why. All we did was we finished the experiment, you know, just got the result the same, but we didn't find out why!!!

Teacher: Right! Yes. That's what you want to do. That would be good, you know, to find out what it was that made the metal oxide go, on the one hand blue and on the other hand red.

The dialogue shows how the evaluation process has encouraged the formulation of a new question; A sudden realization that another problem has arisen to which they were personally committed.

This personal commitment to the solution of a question which they had formulated produces a huge leap in their understanding of the scientific process, in their motivation and in the understanding of the concepts of acids and bases.

They continue their investigation:

Teacher: Denise, can you tell me about the experiment you are doing today?

Denise: Well, I get two test tubes, but I *don't* fill them up with the same amount of water and I measure up the *same* amount of metal oxide, one spatula, and 7 drops of indicator. Tracey uses dirty test tubes, Sandra uses exactly the same amount of water but different amounts of indicator but the same amount of water and metal oxide.

They say that the results might have been wrong the first week, for one of four reasons:

1. They used different amounts of water.

2. They used different amounts of metal oxide.

3. They used different amounts of indicator.

4. They used dirty tubes.

The experiments they devise use a sophisticated technique called "a controlled experiment" where one variable (i.e. amount of water) is altered while all other factors are kept constant. This concept is notoriously difficult for a major proportion of children at this age when taught in the more conventional ways.

They obtained their results.

Teacher: Now you've said "It's nothing to do with the amount of water it's nothing to do with the amount of metal oxide, or with dirty tubes, or the amount of indicator. In fact it doesn't seem to be to do with anything that you've tested.

Sandra: No.

Teacher: Now what do you think was different about the experiment that you did last week which makes it different to the experiment you did this week?

Tracey: Well I suppose what we could try, sir, is that we could have say, different amounts of water in the test tubes and different amounts of metal oxide and dirty test tubes and see whether it was all four of them.

They are saying "It wasn't one factor on its own that made the difference but it could have been caused by all these factors acting together!

Teacher: Yes, that is certainly true. It could have been. What about this idea. The oxide should turn indicator a blue colour, but last week you had one tube that went red. Could it have been a dirty test tube which had acid in it?

Tracey: Wouldn't it go neutral, because a certain amount of acid and a certain amount of alkali in there . . . shouldn't it turn neutral, but we didn't. We got a very strong acid and one got a very strong alkali.

Teacher: You think about that.

Sandra: I don't get what you mean.

Tracey: I thought about it before I asked you!

Teacher: Well, think about it again. Sandra, you don't understand what we are driving at, do you?

Sandra: No.

Teacher: The mistake might have occured last week because you had a dirty test tube and it had acid in it already. Now what would happen if you did all this in a test tube which was dirty to begin with, with a bit of acid. What might happen?

Sandra: What . . . what, you mean if we did an ordinary experiment and it turned acid and then we tipped it out without washing it, do you mean?

Teacher: Mm.

Judith: Well then it would turn acid wouldn't it.

Tracey: Well no, it wouldn't. If you have got metal oxide and that's, well we found out it was a very strong alkali. A strong alkali and a strong acid is going to make neutral isn't it?

Teacher: Well it depends . . .

Sandra: You've got to have virtually the same haven't you.

Teacher: Yes it's a balance isn't it.

Sandra: Tracey said if you had a strong acid and a strong alkali - would make a neutral, but how is Tracey going to know how much acid is in there to add the same amount of alkali?

Teacher: Good point.

Judith: If we use a syringe, then we could put exactly the same in, so we know that it's balancing, or we know if it's stronger or weaker.

Sandra: But we don't know how much acid is in there.

A minute ago Sandra didn't understand the problem the other girls were raising. She has now grasped the idea of 'acids cancelling out alkalis' and of her own accord is appreciating the idea of balancing out different quantities of acids and alkalis whose "strength" is un-known. A giant leap.

Conclusion

The form of in-service support offered to teachers from Bath University Science Centre has influenced improvements in educational standards in 11-14 year old mixed ability science groups. This form of support has emerged from an exploration of the 4 assumptions above. These assumptions are related to enquiry learning, teachers isolating their own problems and evaluating their own practice and an easy access to resources. The resources included the objective evidence on which the teachers evaluate the contradictions between their intentions and classroom practice.

The above form of in-service education is not offered as a blueprint for improvements in classroom practice. The improvements occur through the creative power of individual teachers to transform their own situation. The above form of support is one attempt to respond helpfully to the problems of those teachers who are involved in their own local curriculum development.

3.2 RIGOUR IN AN ACTION RESEARCH ACCOUNT

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Presented to the International Conference of the Classroom Action Research Network, University of Nottingham, 19-21 April 1991

NOTE:- My assignment was divided into two parts. The extracts below are taken from the end of part one and the whole of part two. They are focussed on the application of Winter's criteria of validity to my work. The discussions described in the text are with Jan Winter, Leslie Jefferson, Jack Whitehead and Stephen Bailey - my colleagues on the MED programme. The appendices desribed in the text are too bulky to present here. They were submitted with the successfully submitted report for an MEd assignment on Action Research.

THE PLURAL STRUCTURE OF MY ACTION RESEARCH REPORT

The data in this inquiry is made up of my action research diary (Appendix C), the paper above and the transcript of the discussion on my paper (Appendix D) and an analysis of the transcript (Appendix E) which contains the insights I had gained from the collaborated efforts of my peers and tutor.

My inquiry in this Action Research module had metamorphosed from the intention to find out the effectiveness of my nonverbal skills in teaching to seeking a way to resolve the tension I experienced between the way I was (structured, organised, mechanistic) and the way I felt I should be (valuing people, reflective, dialectic). This turmoil within my head and body was recorded in my diary - the first account produced in this inquiry.

Born out of that tension was the paper presented above. This paper is an account (second one in this inquiry of mine) of how I found relief through writing about my tension trying to see a way to resolve the conflict of ideas in my head. The final piece of data is the critique of my second account in the form of a tapescript of the discussion on my paper and a videotape of the discussion.

The problem facing me now is how should these accounts be organised for analysis? I cannot resist (the positivist in me is not yet dead) designing a structure that has a logical flow to it - analysis and interpretation of data, conclusion and recommendations.

Winter (1989) typifies a conventional report as:

"linear, presenting a chronology of events, or a sequence of cause and effect; they are presented in the single voice of the author, who organizes evidence to support his or her conclusions, so that the report will seem authoritative and 'convincing' to readers."

However, because the process of Action Research seeks "differences, contradictions, possibilities, questions, as ways of opening up new avenues for action....and situations cannot be reduced to a consensus, but must be presented in terms of the multiplicity of viewpoints which make up the situation" (Winter, 1989) an Action Research report has to be expressed in a different format.

Winter considers the appropriate format for an Action report to be a 'plural structure' which consists of "various accounts and various critiques of those accounts, and ending not with conclusions (intended to be convincing) but with questions and possibilities (intended to be 'relevant' in various ways for different readers)."

At this point of my report, I am still struggling with this report. It is difficult for me not to have the familiar research report framework to guide me along. It is a very painful experience for me not to have a skeleton to fill out my research efforts. How I wish I can write under neat headings like "Analysis and interpretation of data" and "Conclusion and recommendations."

How do I present the "dialectical, reflexive, questioning and collaborative form of inquiry" (Winter, 1989) that is action research? How should a piece of action research be presented without using any positivistic framework and yet in the eyes of the world, measures up to the validity and reliability associated with scientific research? Action research is a highly personal endeavour, so how could it have general applicability?

I find solace in the following part of Winter's discussion of plural structure, his fifth principle in the conduct of Action-Research:

"...one does not need to address explicitly a universal audience or to utter a statement in the form of a universal law in order for one's words to have a general significance: 'significance' is, in a very important sense, in the mind of the beholder, as an interpretation which finds points of contact, of relevance, to which the beholder can relate."

I have all the data in my hands and the significant truths have already been extracted from the transcript of the discussion on my paper. I believe that amongst the people who read this action research report, there will be someone who will harmonise with the chords I struck within the structure of the situations I have presented in my diary, my paper and my analysis of my tapescript. Having said that I am convinced that my action research report so far has fulfilled the criterion of plurality of structure.

Logically, the analysis of my tapescript should be presented in the following paragraphs as it is the highlight of my report. I have relegated it to a position at the rear of this report not because it is unimportant but because at this point, a new concern has emerged: I am concerned now with whether my accounts will stand up to the scrutiny of those who:

"cast doubt upon the value of small-scale inquiry carried out with minimal resources by people actively engaged in the situations they are investigating." (Winter, 1989)

For readers who are interested in my original inquiry, they could read my accounts in Appendices C, D & E. For now I urgently need to find the answers to my new inquiry. Therefore, the progress of this report from this point onwards will be to investigate if my action research efforts have been rigorous enough to stand against comparisons with scientific research.

To facilitate that investigation, I shall use five of Winter's (1989) "Six principles for the conduct of Action-Research" as criteria for judgement. The fifth principle, that of plural structure, has in my view been followed closely and have been discussed above. In the following paragraphs I shall use examples from my accounts to show that I have fulfilled each of the remaining five criteria. I shall use the data from the analysis of the tapescript in Appendix D to prove my case. It will be for my readers to judge and decide if they are in agreement with my interpretations and claims.

PART 2: IS THERE RIGOUR IN MY ACTION RESEARCH INQUIRY IN PART 1?

Principle No. 1: Reflexive critique.

Winter (1989) explains the first principle, that of reflexivity, in the following way:

"The thesis of reflexivity begins by insisting upon modest claims: making judgements depends on examples from various personal experiences (not on representative samples of universally agreed categories). These examples can be analyzed, but no analysis will be complete or final, because inquiry will take the form of questioning claims rather than making claims. The result of the inquiry will thus take the form of a dialogue between writers and readers concerning possible interpretations of experience, rather than a single interpretation thrust upon a passive reader by a writer whose enquiry has resulted in certainty. It is this process of questioning claims which is itself a dimension of validity - not the only one but an important one."

Winter outlines the basic procedure of reflexive critique as follows:

1 Accounts will be collected, such as observation notes, interview transcripts, written statements from participants, or official documents.

2 The reflexive basis of these accounts will be made explicit, so that

3 claims may be transformed into questions, and a range of possible alternatives will be suggested, where previously particular interpretations have been taken for granted.

In the paragraphs that follow, I shall give examples of reflexive critique present in my inquiry with reference to the discussion on the paper I presented.

Having presented the gist of my paper to the group using a diagram which I had earlier put on the blackboard, I assumed the role of 'tutor' with the task of leading the group and in Jack's words, *"...to bring out of people here their own inquiries in relation to what you have written and to get some genuine questions coming which would be free and open, which will not be imposed as in skills training..."*.

Analysing the tape for evidence that I had performed this role assigned to me, left me with a sense of dissatisfaction. I could not honestly say that I had been successful in managing the group in this way. Most of the time, I was concerned with clarifying, answering, giving examples, views - hardly what a good discussion group leader would be doing. However, it is not my inability to fill out the role 'assigned' to me that I was unhappy about. It was my realisation my unquestioning acceptance of tasks given to me that woke me up to the fact that perhaps I should have made my feelings clear to people instead of complying ever so readily.

When Jack suggested that I took on the role of 'tutor' the day before the discussion, I was hesitant as I was doubtful if it was possible for me to simultaneously 'defend my paper' and take on the responsibility of charting the educational development of others. I did not voice my doubts strongly enough because Jack was the authority and I reluctantly agreed although I did say before I left him that I would have to "play it by ear" in the session the next day. But the fact remains that when tasks are delegated or assigned to me by those in authority to do so, I do not ask questions nor try to exert any influence by stating my case. If there is a job to be done, it should be done and done well, don't ask - that has been my philosophy.
On page 4 of the transcript (Appendix D), I stated emphatically that:

"...somebody has to be right, somebody has to tell me what to do, and if somebody tells me what to do I will make sure that I willdo ti to the best of my ability. Even here. The assignments - Jack says, you do a paper on the nature of teachers' knowledge, I never questioned or said that I would not do it, I will do, even the first AR (Action Research) - "Peggy you prepare a lesson plan." I never questioned why, did you notice that: Jack, I never asked you why because you were the teacher and you said to do it and every step of the way he said, "do this, do this and do this" and I did it."

Here I had made explicit a claim that I had been given orders to do things. This has consistently been my interpretation of such situations in which I perceive the other party as having more power than I. I would have lived with that belief probably for the rest of my life had it not been for Jan who remarked:

"That's an interesting perception of what's happened between you and Jack there because I don't perceive what's happened to me over the time that we've been together I have been told to do this, do this and do this and I have done them. I am not sure whether that's been true for you either because you perceived things that way."

That observation prompted me to ask Jack for confirmation and what he said was a revelation to me. He said:

"I think I did make suggestions but you took them as instructions."

I had not imagined that the words I had interpreted as instructions were possibly just suggestions which I did not have to obey.

Reflexive critique in this case has opened my eyes to the fact my conditioned responses to what I perceive as orders has deprived me of the freedom to explore possiblilities and exercise choices which could result in better quality work.

Here is another instance of reflexive critique in my inquiry:

The second most significant event in the discussion was my discovery that despite my consciousness of the fact that people's opinions should be valued and respected, I was observed to be rather undemocratic in an instance when I had the power to overrule the wishes of the majority. This observation was made by Jack when he said:

"You see, yesterday we were talking, and I was trying to suggest that your task today would be to bring out of people here their own inquiries in relation to what you have written and to get some genuine questions coming which would be free and open, which will not be imposed as in skills training. But when you offered choice to us at the beginning I knew how difficult that was for you and then as soon as you ot one person....(laughter). Because it was what you wanted to do." (Appendix D, page 5)

Jack was referring to the choices I offered to the group at the start of the discussion as to how they would like to have the session conducted. One of the choices was that I gave a short presentation using a diagram I had previously put up on the board. The other choice was that people would just respond freely to what I had written in my paper. Although the majority in the group preferred free response, I eagerly sprang to my feet to give a presentation as soon as one person had indicated such a preference.

Jack's evidence was corroborated by Steve and Leslie:

Steve: *"Because it was what she'd wanted to do. First piece of evidence she finds to support, she gets to the blackboard."*
Leslie: *"Yes, going to the blackboard would enable her to be the instructor again."*

These comments confirmed the fact that I still very much wanted to hold on to the control that a teacher had. By going to the board, I could do what I had planned beforehand and to give information because only then was I confident that everyone would at least have grasped the gist of my paper. Although my actions were natural responses to the situation, I had not realised their effects on people in the group especially those whose wishes I had ignored not intentionally, but because I was "desperate to get to the board". Perhaps I could have asked the people who had wanted free response to my paper their reasons for their choice instead of just counting hands.

Reflexive critique - people questioning my behaviour and telling me how they have interpreted my actions - has enabled me to be more sensitive and respectful of the expressed needs of others. It has made me aware that there are other viewpoints apart from mine.

Lastly, where reflexive critique is concerned, I feel I have to mention that I was totally oblivious to the fact that my use of the masculine gender practically throughout the paper I presented had in Moira's words dismissed "half the population...". I had not thought that using man as generic was anything wrong as back home, we do not fuss about such things. However, Moira's indignation and anger set me thinking about this issue of equality between man and woman and I begin to see the logic behind it. It is not just words we are quibbling over, it is the fight for recognition as equals that had made Moira angry and having been there to experience her response to the way I had chosen to represent man/womankind, awoken me to another reality that I had been aware of but did not give much thought to until now.

Principle No. 2: Dialectic critique

This principle is based on the concept of 'dialectics' as "a general theory of the nature of reality and of the process of understanding reality...". On this basis, Winter proposes a method of analysis which helps the researcher decide what is significant from amongst the numerous possible interpretations one can come up with when one takes a step back and reflects upon them. In simple terms, 'dialectics':

"...puts forward a coherent general theory both of the nature and structure of reality and also the process of analyzing and understanding reality....dialectics gives us a principled basis for making selections. It thereby helps to contain our potentially vast amounts of data and interpretation within the practical limits (for example, time, resources) of practitioner research."

Using dialectics as an approach to analysing data entails an investigation of:

"(1)the overall context of relations which gives them a unity in spite of their apparent separateness, and (2) the structure of internal contradictions - behind their apparent unity - which gives them a tendency to change, in spite of their apparent fixity."

Was there dialectic critique in my inquiry?. I would say yes. I had assembled my thoughts, beliefs and feelings into a paper and what I had presented in that paper was a structure of my reality - my work background, the political climate that shaped and sustained my thinking, how that thinking had been influenced by what I had learnt about action research and the writing and thoughts of those for and against positivism and finally, how I managed to find a way to accommodate the new ideas I had been exposed to within my life's framework. This was the definition of the scope of my inquiry.

The contradictions were picked out by my peers in the discussion of my paper. I had openly supported social engineering because it was, to me, the only logical way for us as a young nation to survive and progress. At the end of the paper, I said:

"I have thoughts, ideas and knowledge that were not there before. Now I look beyond ostensibly invincible structures and see a way of making life within it more meaningful and valued. I propose to introduce change in teacher training slowly and given time and modest successes there may be a possibility where there can be cooperation between government and people in working towards reform in teaching training in the vocational and educational setting."

The first few questions that followed my presentation were:

"What would an implementation of these ideas do for your society as a whole?....What is your motivation really? Is your system, the existing system working so poorly in terms of (a)producing people with skills and (b)producing happy people, or satisfied people or people who are going to live a full and rich life or are there any shortcomings in any of those departments that you see that AR can ultimately improve?"

Peter probably could not understand why I should now embrace the philosophy of Action Research when I had spent half of my paper glorifying the political system and economy of my country and even till the very end, I wrote: "I accept the way my country is run and I give my government my fullest support and loyalty."

It could have appeared that I was holding two ideas at the same time where what might be more plausible would be to have one or the other but not both together.

Though in thinking, I have moved into the realms of values as against structure and concern with the ends and not the means, in practice I have not really been transformed by what I have learnt and accepted through action research - democracy, justice, valuing people. The observations by the group set off contradictions in me. I want to be more humane, less mechanistic but all the ghosts of my past come to haunt me and to impose structures, order and control in the way I relate to the world and people. These contradictions are there and it will take some time and a lot of conscious effort on my part to resolve. I don't just feel that they are there, they were perceptively noted by Jan when she said: (Page 10, Appendix D):

"I think she has oscillated between two extremes....This term you have been going in a different direction that you were going in the last. And I am not sure what I am left with here except you are in a lot of contradictions because there is a lot there that is unspoken."

Steve shares similar feelings when he said:

"Yes, I got a feeling that there is no synthesis yet. You have stated the thesis and antithesis and in some sense you are leaving the synthesis somewhere in the future..." (Appendix D, page 10)

These observations accurately describe the tension and contradictions within me from the time when I started to look for a focal point to build my paper around. With the completion of the paper I have released some of that tension in theoretical proposals but not in reality. Jack illuminated the group with the following explanation:

"...One of the central points about education and training is the point in which you are accredited, where judgements are made, where you are assessed. In relation to power and control that is where you begin to see how a system is organised....It may appear to be a throwaway line but I think it is very significant: "I do not care if I don't get and 'A' for this paper". I suppose, I think we all ought to care. If we feel that the quality of the work we've judged in relation to the criteria....Peggy's work itself justifies that judgement and we are in a set of power relations that might come to a different conclusion using the same criteria. Then it is what you do about it that the synthesis takes place. When she gets back to Singapore, she intends to do certain things. We'll only see the synthesis in action there."

I think I do not need to restate the obvious. The principle of dialectic critique was alive and kicking throughout my whole inquiry.

Principle No. 3: Collaborative resource

The third principle - that of collaborative resource indicates:

"...a process of simultaneously giving weight to the understandings contributed by all members, and at the same time a process of 'deconstructing' the various contributions so that we can use them as resources for 'reconstructing' new categories and interpretations."

Unlike positivitic research where the researcher is detached from those whom he observes, working collaboratively in action research means that:

"...it is the variety of differences between the viewpoints that makes them into a rich resource, and it is by using this resource (the differences between viewpoints) that our analysis can begin to move outwards from its inevitably personal starting point towards ideas which have been interpersonally negotiated."

In the previous examples given to illustrate reflexive and dialectic critique, I have shown how through other peoples' questioning of my statements and actions that had resulted in a broadening of my mind towards certain things. Reflexive critique would have been impossible without the operation of the principle of collaborative resource. Without collaborative resource, I would have been much poorer in knowledge, probably living in ignorant bliss that much of what I believed in was unquestionably right.

Principle No. 4: Risk

This principle states:

"that initiators of research must put themselves 'at risk' through the process of investigation....the process is not merely one of exposure to refutation, but of exploring possibilities for transformation....In engaging in a process where the purpose is change (innovation at the level of practice and the development of new insights concerning practice) we are part of the situation which is undergoing change. We have no theoretical basis for exempting ourselves from the

processes we set in motion, and we do not want to be exempt; on the contrary, we want to change because we want to learn as much as possible..."

I think my enquiry has satisfied this criterion fully. Writing that paper for discussion was a 'risk'. I had consolidated my thoughts and views into 15 pages and I was prepared for people to question my claims, assertions, beliefs and proposals and to emerge from their scrutiny with a much wider and informed world view. Although the discussion did not focus on everything I had written it had resulted in the crystallisation of some significant insights and realisations that benefited me educationally and professionally. If anyone in the group was at risk, it was certainly me. I still remember what Steve said to me at the end of the whole ordeal (presenting the paper and having it discussed). He said I was "very brave". There can be no bravery without the element of risk present.

Furthermore, towards the end of my paper, I had made some proposals on how I would change the face of teacher training in the VITB. I have commited myself to black and white statements these plans of mine. It is done now and I am exposing myself to the risk that I may not be able to get these plans to materialise. In research done in the positivist tradition, all I needed to do was to make recommendations and apart from the risk that my report was not valid or reliable, I could rest easy once the report is out.

Principle No. 6: Theory, practice and transformation

Winter emphasises that:

"theory and practice are not two distinct entities but two different and yet interdependent and complementary phases of the change process."

There are two action research inquiries contained in this report. The first one is ready for implementation. I have surveyed the theories produced a paper that is a synthesis of my thoughts and reading, gathered valuable insights through discussion with my peers and all that is left is to go back to my place of work and apply the theories to my practice to transform it. I can anticipate that the transformation will not be a smooth straightforward matter but that there will be a continual cause-and-effect relationship between theory and practice.

"...theory, being based in practice, is itself transformed by the transformations of practice. Theory and practice do not therefore, confront one another in mutual opposition: each is necessary to the other for the continued vitality and development of both."

The second inquiry is just at the synthesis stage. It requires the validation of a collaborative group before implementation can take place. If I may project the course of development of this second inquiry, I would say that the outcome of a debate amongst my peers as to whether I have satisfied the six criteria of rigour in action-research would be in the form of insights that would provide me with guidance in doing future action-research in a rigorous way.

The mental exercise of synthesising my action research accounts in Part 1 with the six principles for doing Action-Research has been a worthwhile pursuit of knowledge. Although, the inquiry in Part 2 is incomplete, my understanding of Action Research has deepened and I now have a structure to work with. It is a different structure from the one that I am familiar with but having acquired in theory how to build such a structure in conducting research, I am more confident of my ability to conduct such research when I am back at work in VITB.

EPILOGUE

Last week, I went to see a movie entitled "Dances with Wolves". It was the most beautiful and touching film I have ever seen in my life. It was about a soldier who volunteered to be posted to the American frontier because he wanted to see what it was like. When he arrived a the post, he found it deserted but he decided to stay on. He rebuilt and cleaned up the place and passed his leisure writing a diary. One day, a Sioux Indian medicine man came across the post and was examining it when the soldier returned. The Sioux Indian was startled and took flight immediately.

A series of encounters took place after that and the soldier soon got to gain the trust and friendship of the Indians. He learnt their language and married a white girl who was brought up by the medicine man. Slowly he assimilated their ways of life but he was always bothered by the fact that these beautiful people would one day be pushed to the end of the world by the white men. How was he, a powerless individual able to help them? He understood them but that was not enough. He was captured by soldiers but he did not betray his friends. He was one of them and when he was tortured by the soldiers, he proclaimed his new identity in the language of the Sioux saying that his name was Dances with wolves. That was the final break with his

heritage. Why did a white man choose to be Sioux Indian when all the white man did not think that Indians were entitled to a free life on land that was rightfully theirs?

The difference is that this one man had lived amongst the Sioux and experienced their way of life and had truly understood that Red Indians are not just riders on horseback that you take aim and shoot at whereas the rest of the white men were only interested in carrying orders to shoot on sight.

What has this movie got to do with Action Research? Well, I could not help thinking about it in action reseach terms. The dialectics amongst the Sioux leaders while conferencing and the dialectics between the Sioux medicine man and the hero helped to bring both parties closer together. The soldier was a living contradiction. He was white and a soldier and therefore he should look upon the Sioux as enemies. Yet, because he was alone and was answerable only to his own actions, he got to become their friend. Technically they were enemies but in reality they were friends. He had to resolve that tension. One way was to negotiate a peace treaty between the Sioux and the white men. If he was able to do that with the understanding he had acquired while he was making his 'inquiry' he would have succeeded in bringing people towards a more productive and peaceful world. Unfortunately, he was powerless but he chose to live and fight as a Sioux for survival on the enclosing frontier.

In a way, I could relate to the main character in the movie because I have experienced the power of dialectics in helping me to understand myself and others and the knowledge I now possess gives me the ability to think, without positivistic frameworks, about how things could be improved at work, and how life and relationships at the workplace can be improved or sustained at a quality that everyone agrees is desirable.

I see the present stage of my development in action research as being at the point where the soldier, out of loneliness at his post, built a fire and did a Red Indian dance round it. He was able to forget his inhibitions and the fact he was white and for the duration of the dance he was just communicating with his friends through dance unaware that they were watching him. He was called Dances with wolves because a wolf was near him when he was dancing. Perhaps I may be called at this stage of my educational development -Dances with Action Reseach. Perhaps I am shedding my inhibitions more and more now that my understanding of Action Research has deepened through the two inquiries I carried out in this assignment.

How much more meaningful it is to do research where:

"The central task of inquiry is to devote reason to the enhancement of wisdom - wisdom being understood here as the desire, the active endeavour, and the capacity to discover and achieve what is desirable and of value in life, both for oneself and for others. Wisdom includes knowledge and understanding but goes beyond them in also including: the desire and active striving for what is of value, the ability to see what is of value, actually and potentially, in the circumstances of life, the ability to experience value, the capacity to help realize what is of value for oneself and for others, the capacity to use and develop knowledge, technology and understanding as needed for the realization of value. Wisdom, like knowledge, can be conceived of, not only in personal terms. We can thus interpret the philosophy of wisdom as asserting: the basic task of rational inquiry is to help us develop wiser ways of living, wiser institutions, customs and social relations, a wiser world." (Maxwell, 1984).

I would like to think that I have been touched in a special way with an educational knowledge that has enriched my mind even if it still has not broken habits formed through the years. I would like to think that the knowledge I have acquired is the kind of integrative knowledge (Kolb, 1984) that enables me to feel, understand, judge and create in a holistic way. That I face the world and see what was once my whole world being transformed:

"...into but one of a multidimensional array of world to experience."

I hope that this new-found knowledge will take root and grow within me so that some day other people can be touched and transformed by me in the same way that I have been because:

"The dawn of integrity comes with the acceptance of responsibility for the course of one's own life. For in taking responsibility for the world, we are given back the power to change it." (Kolb, 1984).

I do not wish to change the world - only a very small part of it, for a start.

The above work has drawn on the concept of 'rigour' appropriate for action research from Winter, R. (1989) *Learning from Experience.* Falmer.

3.3 THE VALIDATION GROUP AS A CONVERSATIONAL RESEARCH COMMUNITY.

Martin Forrest
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In his MEd. dissertation, 'The Teacher as Researcher', Martin Forrest (1983) describes how he used a Validation Group to test the validity of his account of the effectiveness of his in-service support in primary education. The questions below are concerned with making explicit the criteria we use to judge improvement and with judging the effectiveness of one's own actions in relation to improvements in the quality of learning. Such questions appear to be fundamental in many of our enquiries.

MARTIN'S QUESTIONS AND RESPONSES

1) How can we know that an improvement has taken place in the school classroom? What criteria do we use to judge whether an innovation has led to an improvement in the quality of learning?

2) In the context of my work as an inset tutor, how effective am I in my role as a disseminator and supporter of innovation? What evidence is there to support my claim to be helping teachers to improve the quality of their children's learning?

Both sets of questions were concerned with providing criteria for judging improvement and with trying to identify evidence of improvement of a kind which would satisfy the Validation Group.

The first meeting of the Validation Group engaged in a lengthy discussion which ranged widely over a number of possible criteria of improvment; there were many conflicting points of view and many different pieces of advice were offered to the researcher. Two features stand out in this discussion: firstly, the expressed wish to try to pin down in fairly precise terms the nature of the improvement sought and think in terms of established educational research methods using experimental and control groups. Carol reacted strongly to the suggestion which came from several members of the group, that improvments might be measured in the conventional way:

"It reminds me of the old system of teaching children by the I.T.A. method and the traditional (method). How can you compare one group of five year olds to another group of five year olds. How can you compare the methods of teaching reading against completely different groups? (Taped disscussion of first Validation Group meeting).

Carol's response shows up a key weakness in traditional methodology and encourages the search for an approach which takes account of individual differences in children and teachers.

The alternative methodology of an action research approach in which improvements are evaluated over a period of time was put forward as a totally different approach and one that was unfamiliar to most members of the Validation Group.

"Suppose it's not a method where you compare. Suppose we don't look at it like that, suppose we say that as a teacher you have certain values, that you're trying to stimulate certain kinds of qualities in them and that's our main task, to try to understand how you as an individual are relating to these pupils, what you're doing, the kind of problems you say you have, the solutions you've imagined ... if you can actually hold up for public criticism the kind of realtionships you have in the classroom with pupils and other people who can identify with the experiences and the problems you're having (we) can actually learn something about the process of improvement from you, because you've been through certain kinds of processes, that in itself is extremely valuable, because you're holding up for the first time to public criticism the actual process of education and in groups like this I think we'll be able to identify with each other". (Jack Whitehead - taped discussion of first Validation Group meeting)

It was agreed that evidence would be collected in the form of audio and video-tape recordings and, where appropriate, examples of children's work with a view to demonstrating improvement taking place over a period of two to three months (almost to half-term in the Summer term).

Following the first Validation Group meeting, the researcher discussed with the two teachers how the action research might be given a sharper focus, bearing in mind that the intention was not for the researcher to engage in a traditional form of educational research activity, but to monitor improvements taking place over time in relation to the teacher's own educational values and to look at particular children in the class for particular improvements taking place. By the time of the second Validation Group meeting both Sue and Carol were well under way with their respective cycles of action and reflection.

Evaluating the solutions -

The report presented to the final Validation Group meeting which attempts to explain the educational practices of Sue Kilminster, spanned the period from early February to late May. This report traced the history of one full action/reflection cycle in which Sue attmepted to resolve two particular problems that she had encountered in her work with historical artefacts. Firstly, there was her need to establish effective ways of promoting the development in her children of lively enquiring minds and the ability to question and argue rationally. Secondly, there was her concern to provide opportunities for children to relate the artefacts to an historical context and in so doing to promote her other aims. For example, her concern with change through time, interdependence and moral values.

Sue's educational values may be said to have been negated (Foster, 1982) in two particular respects: firstly, in relation to helping her pupils to develop lively enquiring minds, Sue felt that she had failed with the first artefact case to provide conditions which might most effectively promote a questioning discussion and rational arguement among the children. This problem was resolved by implementing group work, and by the use of a feely box to help sustain discussion. Secondly, Sue had experienced a negation of her declared intention of helping the children to study each object in its historical context. On the one had, she felt it important for them to speculate in an imaginative way and on the other she wished to introduced relevant source materials. With the first box, problems arose because Sue found difficulty in integrating the additional resources she had provided with the childrens' study of the artefacts. This difficulty arose partly from Sue's not knowing precisely what resources would be needed to back-up the artefacts. Furthermore, her own wish to share the childrens' ignorance in relation to the nature of the objects conflicted with her need as a teacher to be ready to tackle the next stage of development: the exploration of the historical context of each object. The long term solution as suggested earlier would be to produce supporting packs of two-dimensional resource material. The short-term solution was provided by the phased introduction of relevant resources supplies from the Polytechnic resources collection.

Sue - modification of practice in the light of evaluation

The report presented to the Validation Group represents one completed cycle of action/reflection by Sue and had incorporated within it a number of suggestions for modification of her practice. The eighth point relates to seeing how far the children can work systematically on their own.

In the course of the third Validation Group meeting, Sue indicated that, as a result of seeing the video-tape of Carol's five and six year olds and the extent to which they had learnt to work independently of the teacher, she would like to see how far her eight and nine year olds had now developed the ability to work autonomously as the result of the work she had been doing. *"I would like to use the experience and just give them the objects without any help at all."*

Accordingly, Sue planned two weeks after the final Validation Group meeting for the researcher to video-record the whole class, divided this time into new groups, each working with a completely new object. Sue had thus embarked upon a new cycle, spurred on by her colleague from another school and taking into account the eight points which arose from her evaluation of the earlier implementation of work with artefacts.

Evaluating the solutions - Carol

Carol's educational values included her contention that it is important to try to get children to appreciate some idea of time. Her belief in the importance of this may be said to have been negated by her perception of limitations in her children' understanding of time past. In discussion with the researcher, Carol voiced her doubts about helping children to sort out a 'sense of chronology.' A second way in which Carol's educational values may be said to have been negated is in relation to her aim of developing lively and enquiring minds. Here again, it was Carol's own perception of her childrens' limitations which formed a barrier. Carol felt that words of exhortation written by the Avon primary teachers 'Working Party of which she had herself been a member, were less appropriate to her own much younger children, for example the report states:

"The exercise is likely to be more productive if, in the first instance, children are allowed to handle and discuss the object without teacher interference." (Avon Education Committee, 1982c)

Carol's conviction that such a technique was impossible with five and six year olds, at first seemed unshakeable, but her recognition that they may be "helped to do this through experience" is contained in her statement:

"It's like putting a maths card in front of a five year old and saying 'Try and work things out for yourself.' They wouldn't be able to unless they'd had experience before.'

Carol was prepared to try out the procedure and to see what happened, though she was clearly sceptical:

"..... I will give it a try just to prove the point."

The second Validation Group discussed the transcript of the children using their second artefact case in which Carol introduced the feely box abd made some reference to the transcript of the subsequent discussion between Carol and the researcher. The documentation makes clear that Carol acknowledged that an improvement had taken place in relation to developing an enquiring mind as evidenced by their use of language. The language used by the children drew the following question from Jack Whitehead at the second meeting of the Validation Group:

"If we could get back to that point about criteria; on the first question, would everybody accept that kind of evidence if it was subjected to analysis of the relevant criteria of lively enquiring minds, the ability to question and argue rationally was evidence .....?

..... I've got a feeling for the first time that Martin might be able to justify that statement - it's on the last page (of the transcript) - "I wonder whether my Auntie Millie's auntie was born there.""

Encouraged by the response of the children to the second artefact study case, Carol decided to withdraw from the discussion to an even greater extent when she came to use the third study case. This time she did not use the feely box but reverted to wrapping each object in paper. The proceedings were video-taped and the recording presented to the third Validation Group meeting for them to scrutinize. The Validation Group was clearly impressed, in particular, by the way the children approached each object in turn with very little help this time from their teacher.

Jack: *"The last thing that impressed me most (with that shoe last) was the way, somehow, these children came to that conclusion through dialogue and discussion themselves. It was very impressive."*

Mary W: *"I just wanted to say I was very impressed by the evidence of lively enquiring minds....."*

The researcher was asked by Jack to pick out the points in the early dialogues with Carol when she made plain her doubts about the childrens' ability to work in this autonomous way. The following dialogue ensued:

Carol: *"You proved me wrong on this!"*

Jack: *I think that's quite crucial to Martin's work: I was very impreseed at the way the children were arguing among themselves and I just felt here, when you say here on the bottom of the second page "they wouldn't be able to unless they had experienced it before".... (reference to analogy with Maths workcard) .... what you've demonstrated here is that you <u>were</u> giving them that experience and they <u>did</u> argue rationally."*

Group member: *"You weren't giving them this before"*

Carol: *"They'd actually progressed."*

With regard to Carol's concern with developing in her children an understanding of time past as well as with regard to language development, one extract from the first Validation Group meeting, after Carol had used her first artefact study case, shows that Carol recognised the importance of using artefacts to overcome the severe limitations in children's understanding of time.

Ron Adams: *"What do you hope to achieve with these that you couldn't achieve in their absence?"*

Carol: "*Well, it's a lot better to have the objects than photographs with this age. Such a lot of language has come out of it - I suppose I could have had language out of other objects - it's given them some insight into historical things. They've been very excited about them."*

With the second and third study cases, very limited attention was paid to placing objects in their historical context and associating specialised vocabulary with the artefacts. However, with encouragement from the researcher this level of specificity was gradually extended. For example, with the second box, Carol's explaining the use of the weaving comb and the researcher's intervention which placed this object chronologically before the Roman mosaic.

Comments were made by members of the Validation Group on the evidence presented in the video-tape of children showing some awareness of time. One of the objects discussed by the children was a leather-bound eighteenth century book.

One group member made the following point:

"It couldn't be a library book, because you couldn't keep a book out of a library as long as that: obviously they've got some concept of time, haven't they? Also their idea of a Roman book which was a scroll, they obviously felt that, because there wasn't a suggestion that you could have the same things at the same time."

At the end of their study of each object in turn, Carol invited the group, on the researcher's suggestion, to see whether they could arrange the objects in chronological order. The result was that they placed the Roman amphora as the oldest with the eighteenth century book as the next oldest (which is fact it was). The cobbler's last was placed at the other end of the time scale.

Carol - modification of practice in the light of evaluation

The fifth phase of Carol's action/reflection cycle was not presented in the Validation report on her educational practices. The Validation Group met very soon after Carol had used her third case of artefacts and there had been no opportunity to interview Carol about her reactions to the children's responses.

The video-tape was played back immediately after it had been recorded on a monitor with a large screen to the whole class in the middle of the school hall. Several colleagues were among those who came to see part of the video-tape at the end of afternoon school. Carol and her colleagues were impressed by the progress they observed in the children which they saw to be the result of their work with artefacts.

Since this written study has been restricted to the practice of two teachers, it has seemed unwise to be side-tracked into discussing the interest shown by other colleagues of the two teachers. At Sefton Park Infant's School, however, several teachers used the artefacts with their own children and followed Carol's work with interest. The Head showed a lively interest throughout.

Evaluating the researcher's role

"What I think I'd need to see in relation to your (question) No.2, are the teachers saying they actually lack something and that you're actually working with them to provide something they say they lack; this being used in the classroom with your pupils, and then trying to relate this to your No.1 which is then judging whether or not improvements have taken place in the quality of the pupils' learning."

(Taped discussion of first Validation Group meeting.)

Both Sue and Carol were questioned independently and on separate occasions by members of the Validation Group about the researcher's inservice role. With regard to the researcher's role of disseminating the innovation, in this case the use of historical artefacts, and in sustaining teachers in their own work as teacher researchers,

Ron King: *"One change is that there wasn't much history taught and now there is!"*

Peter: *"That's a very important point."*

(Taped discussion of second Validation Group meeting.)

Support for Carol.

Jack: *"(Martin is claiming to have provided) inservice support and I think we've got to be able to demonstrate this, that yes, he has assisted in some sense improvements to take place in the classroom. Now I can cope with the first question (i.e. that improvements have taken place in the classsroom); I'm still a bit hazy about the claim to know that inservice help is actually helping/"*

Mary Wilson: *"Carol thinks that the inservice help has been helpful .....*
.....surely if we're looking at Martin's role as an inservice teacher, in opening .. teachers to something they didn't know before, we saw this here and now we're sure."

Jack: *"That will in itself be evidence."*

Mary Wilson: *"Sue is now going into the classroom to try the same things herself because her expectations have been raised and I don't think we need further evidence from the teachers."*

(Taped discussion of third Validation Group meeting).