An investigation into an application of personal construct theory to curriculum evaluation.

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AN INVESTIGATION INTO AN APPLICATION OF
PERSONAL CONSTRUCT THEORY
TO
CURRICULUM EVALUATION

submitted by
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Signed...................

(Paul Rolph)

Date......................

October 15th, 1984
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ABSTRACT

The concern for quality in English education has resulted in pressure on educational institutions to evaluate their curricula as a matter of normal professional practice. This thesis consists of a critical account of the development, design and testing of a curriculum evaluation process which could be used by teaching staff to evaluate the curricula of their own institutions. Curriculum problems are practical ones, decisions have to be made about what to do. It is argued that a deliberative approach is an appropriate one for such problems. That is, an approach which identifies the issue(s), seeks to discover the perspectives of those involved, generates a range of possible solutions, and leads to decisions as to what solutions might be most appropriate for that context.

In 1976, the author had developed an evaluation process based on personal construct theory and the related repertory grid methodology. He found this process encouraged active participation, together with the identification and exploration of the perspectives of those involved. The experience gained in this research encouraged the author to investigate whether personal construct theory and repertory grid methodology might assist in the design and development of a curriculum evaluation process for use in a wider range of educational settings.

In this research the author has been able to demonstrate that personal construct theory and repertory grid methodology has
assisted in the design of a curriculum evaluation process and that the process has been successfully carried through in a range of educational settings. However, the author did not find that extending the process by giving participants a statistical analysis (in a particular form of a cluster analysis) of their own data added to its usefulness.
INTRODUCTION

This thesis consists of a critical account of the development, design and testing of a curriculum evaluation process.

The Department of Education and Science (DES) has been calling for curriculum evaluation as a matter of normal professional practice. The DES Circular 8/83 (1983) invited local education authorities to let the Secretary of State have a summary of the steps taken by primary and secondary schools to set out their aims and to assess how far, in the authority's view, the aims adopted by individual schools were compatible with the authority's curriculum policy. This call for curriculum evaluation has not been confined to primary and secondary schools. Since 1973, the Council for National Academic Awards has required further and higher education institutions to submit, when seeking renewal of approval for a course, a critical analysis of that course's operation. The Council's 1979 Principles and Regulations state this explicitly.

"The course together with its operation and teaching, must be subject to regular monitoring and evaluation by the staff teaching it and by the institution. The object of this monitoring is to maintain the standard of the course, and to improve, where possible, upon the means whereby the objectives of the course can be achieved."
(CNAA, 1979 Principle 1.4)

Many approaches and methods have been used to monitor and evaluate what goes on in educational institutions and each has its advantages and disadvantages.
In 1976, the author (Rolph, 1976) was involved in research into methods of evaluating teaching practice. While engaged in this research, he developed an evaluation process that used Kelly's personal construct theory and the related repertory grid methodology. It was found that the use of this evaluation process encouraged an active participation by the student in the evaluation of his lesson and led to the supervisor and the student-teacher having a greater understanding of their own and each other's perspectives. The experience gained in this research encouraged the author to investigate whether personal construct theory and repertory grid methodology might assist in the design of a curriculum evaluation process for use in a range of educational settings.

AIMS OF THE THESIS

Two of the three aims of this thesis are therefore:

a) To examine whether personal construct theory might assist in the design of a curriculum evaluation process.

b) To investigate that process in a wide range of educational settings.

The data provided by repertory grids (a technique derived from personal construct theory) can be analysed in many ways. Some are simple and do not require statistical analysis, for example, merely a scanning of the raw grid matrices by the participants. Other analyses are more complex and use a range of statistical techniques.

The third aim of this thesis is therefore:
c) To investigate whether a statistical analysis in the curriculum evaluation process adds to its usefulness.

The use of the terms 'curriculum', 'evaluation' and 'curriculum evaluation' in this thesis

The terms 'assessment' and 'evaluation' are not used synonymously in this thesis. They are distinguished by referring to the evaluation of the curriculum, whereas assessment will be used when making reference to pupil performance, although this distinction does not imply that pupil performance has no part in curriculum evaluation.

The meaning of 'to evaluate' in everyday usage is clear. It means 'to judge the worth of something'. Hence curriculum evaluation will be interpreted in this thesis as 'the process of judging the worth of the curriculum'. But this presupposes an understanding of the word 'curriculum' and there is no consensus definition of this term. Sometimes it is interpreted in a narrow sense as 'a syllabus or subjects on a timetable'. At the other extreme, curriculum is used in a wide sense to include what is taught, how it is taught and why. Some published definitions of curriculum illustrate the range of interpretations given to this term. Johnson (1967), reflecting the behavioural objectives movement so influential in the USA, states that

'curriculum is a structured series of intended learning outcomes. Curriculum prescribes (or at least anticipates) the results of instruction.' (Johnson, in Stenhouse, 1975, p.4)

Stenhouse (1975) argues that this definition makes too many assumptions and offers a more tentative one. He suggests the
following as a working definition.

A curriculum is an attempt to communicate the essential principles and features of an educational proposal in such a form that it is open to critical scrutiny and capable of effective translation into practice.' (Stenhouse, 1975, p.4.)

Lawton (1973) observes that teachers in schools cannot teach everything that is available for learning; they must decide on priorities. He proposes that curriculum is

'a selection from the culture' (Lawton, 1973, p.21)

Lawton explores this statement. There are, he claims, eight features or systems found in all human societies and he also hypothesises that all societies have means of transmitting these features from one generation to the next. Lawton argues that

if curriculum is defined as a selection from the culture, then care must be taken to ensure that the selection must be an adequate one; culture can be sub-divided into eight systems, so an adequate selection must include all eight - unless we can be assured that transmission takes place outside education.' (Lawton, 1983, p.38)

This argument, he claims, is deliberately circular. Lawton's definition emphasises that no curriculum is value-free; different value systems will generate different curricula. (Lawton, 1983, p.13)

The definitions considered so far have tended to stress the intentional and planned aspects of the curriculum. There is also the hidden curriculum, that is those things learned by pupils at school but which are not themselves included in the planning or even in the consciousness of those responsible for the school's organisation. Implicit within that organisation will be the values of those
responsible and these values will be communicated to the pupils.

The interpretation given to curriculum in this thesis will be a wide one in order to encompass any aspect of an educational institution's life that the staff might wish to evaluate.
CHAPTER ONE

THE CONCERN FOR QUALITY IN ENGLISH EDUCATION
(1858-1983)

The concern of this thesis is curriculum evaluation and the purpose of this chapter is to set the context within which the author developed his curriculum evaluation process.

The quality of primary, secondary, further and higher education is a significant, current concern. In March 1983, the Secretary for State for Education and Science presented to Parliament a White Paper entitled Teaching Quality. This Paper claims that it is the Government's aim

'to make the best use of available resources to maintain and improve standards in education. In the schools the teacher force, some 400,000 strong in England and Wales, is the major single determinant of the quality of education.'

(HMSO, 1983, paragraph 1.)

But a concern with the quality of State education in this country is not new. During the last forty years or so of the nineteenth century and the first twenty five years of the twentieth century, attempts to maintain standards in English elementary schools were mediated through a centrally prescribed curriculum.

The rise and fall of a centrally prescribed curriculum

In 1858, the Newcastle Commission recommended the use of tests as a means of assessing pupil performance as well as teacher efficiency. Four years later, the much criticised 'payment by results' system emerged in the 1862 Revised Code which set out the conditions under which grants would be
paid. It was decided that grants would be awarded on the results of an annual examination of all children in the school on a curriculum prescribed in terms of the reading, writing and arithmetic and plain needlework for girls. This system, with certain modifications, lasted until almost the end of the nineteenth century. Payment by results is perhaps the crudest example of educational accountability. Lawton (1980) suggests that the reasons for this form of central accountability, as a means of controlling quality, were complex. He postulates that although the middle classes wanted constant reassurance that they were getting value for the money spent on elementary education, they were also concerned that the education provided for the lower orders should not be so good as to threaten their own children’s place in society.

The first Education Act was passed in 1870 and although it laid the foundation for universal education, H.G.Wells questioned whether it laid the foundations for quality. Gordon and Lawton (1978) quote H.G.Wells’ view of this Act as:

"Not an Act for a common universal education, it was an Act to educate the lower classes for employment on lower class lines, and with specially trained, inferior teachers."

(Gordon and Lawton, 1978, p.60)

Gordon and Lawton (1978) describe an incident which illustrates the restricted curriculum derived from the Elementary Code. In a case brought against the London School
Board in 1899, Cockerton argued that the rates were being spent illegally by the London School Board because they were providing elementary school children with a curriculum wider than that specified in the Elementary Code. In 1901 the Queen's Bench found against the London School Board and this judgement was upheld by the Court of Appeal.

The Elementary Code continued to operate after the 1902 Act with the curricula requirements laid down in some detail. Further codes, regulations and circulars continued to appear throughout the period 1904 to 1917. However in 1905 a publication, Handbook of Suggestions for Teachers in Elementary Schools, was produced. The use of the word 'suggestions' is noteworthy and may be considered a small but significant step in the relaxation of central control of the curriculum. In 1918, another Education Act was passed and this proposed the raising of the school leaving age to fifteen. (However, this was lost in the economic slump of the 1920s.) But this Act had little to say about curriculum. In 1926 the regulations contained within the Elementary Code were abolished. The reasons for this were again complex. Gordon and Lawton (1978) suggest several possible interpretations of this removal of central control of the curriculum. It could be seen as central government freeing teachers to make decisions about the curriculum. Gordon and Lawton (1978), however, offer White’s (1975) view as another interpretation. It is possible that Lord Percy, the Conservative President of the Board of Education, was afraid
that a Labour Government might wish to exert a strong influence on the school curriculum and hence decided to reduce the amount of central control in a way that would be difficult to reverse. Another interpretation of the loss of curricula regulations is that this may have been due to administrative oversight rather than political forethought. Yet another interpretation is even more cynical. The regulations were removed, it is suggested, knowing that the constraints were such that, in reality, teachers had no more freedom than a centrally controlled system would offer. But whatever the explanation, central control was removed in 1926 and teachers in elementary schools were no longer restrained by a set of regulations, but merely by a Handbook of Suggestions. The 1944 Education Act gave to secondary teachers a similar freedom. (The last Regulations for Secondary Schools had appeared in 1935.) The only subject prescribed for the school curriculum in this Act is Religious Education. Again the motives for this delegation of power have been debated. Lawton (1980) suggests that

`perhaps no one at the centre knew what kind of curriculum should be offered when secondary education for all was introduced`.

(Lawton, 1980, p.19)

The Norwood Report, published one year before the 1944 Act, took the recommendations of the Spens Report (1938) and attempted to justify a tripartite system with different kinds of curricula on offer to the three different 'types' of pupils. Lawton (1980) observes that this was a highly political doctrine disguised as scientific psychology.
The passing of curriculum control to LEAs and teachers

From 1945 onwards, the control of the curriculum was passed to local education authorities (LEAs) and their representatives, the governors and managers. In practice however, the school curriculum was largely left to the headteachers and their staffs, although restraints of various kinds had their influence on the school curriculum. For example, in primary schools the curriculum tended to be dominated by the demands of the 11-plus examination. Maurice Kogan (1978) argues that 1945-1960 were years of consensus and even optimism: both the Labour and Conservative political parties were committed to educational expansion and were not even seriously divided on the issue of comprehensive education. It can also be seen as a period of teacher control of the school curriculum, although discussion concerning the quality and nature of the curriculum for the emerging comprehensive schools was hardly ever heard. Lawton (1980) observes that

"it might be said that the teachers had their chance to take control of the school curriculum, but failed to take it".

(Lawton, 1980, p.22)

Holt (1983) suggests that this may have been due to a failure to recognise the curriculum as the crucial educational element.

By the early 1960s, however, consensus among the two major political parties on educational issues was coming to an end. It was at this time that Sir David Eccles, the Conservative Minister of Education, talked of "the secret
garden of the curriculum' indicating his dislike of the lack of public debate on such an important aspect of schooling. He proceeded to establish the Curriculum Study Group, and in 1963, the new Minister of Education, Sir Edward Boyle, replaced it with the Schools Council. By this time, the Nuffield Science Projects were already well established and substantial curriculum development was under way in the USA. From 1964, until its demise in 1983, the Schools Council for Curriculum and Examinations was closely associated with many aspects of curriculum development in this country. In the main, the Schools Council developed large scale, single-subject projects, rather than plan and design the school curriculum as a whole. Nevertheless the Schools Council must be credited with giving an impetus to curriculum evaluation; mainly due to the presence of Schools Council evaluators in these many, large scale projects. Sir Keith Joseph, Secretary of State for England and Wales at the time of the dissolution of the Schools Council, announced in 1982 that two new bodies would be formed. The double task of 'curriculum development' and 'public examinations' taken by the Schools Council, was to be separated; one body would be responsible for reporting to the Secretary of State on the public examination system and the other body would advise on curriculum development.

The return of central influence and the rise of accountability

The number of pupils in comprehensive schools increased about ten fold between 1965 and 1975, but according to Holt
(1983), these schools were still without an appropriate curriculum for the task.

The optimism and hope of the 1960s, shattered by the oil crisis and other signs of economic recession, had given way to doubt and talk of accountability. The accountability movement was already well established in the USA and, during the late 1960s and early 1970s, schools in this country came increasingly under scrutiny. Questions about value for money in education began to be asked in the first of the Black Papers (Cox and Dyson, 1969). They attacked progressivism and various aspects of comprehensive education. The media joined in the attack too. Readers of the Daily Mirror, for example, learned on February 7th 1975 that

'literacy in Britain is marching backwards'

and readers of the Daily Mail on November 4th 1976, read that

'the brutal truth is that standards have fallen'.

In 1974, the DES set up the Assessment of Performance Unit, probably in response to the concern about standards in schools. Also in that year, James Callaghan, Prime Minister of the new Labour Administration, asked for a report from his Education Secretary on the state of schools in England and Wales. A confidential Yellow Book was produced and it recommended the need to view the nature and quality of the curriculum, as a whole, rather than merely a collection of subjects. But it is 1976 that marks a significant change in central government's interest in the nature and quality of
the school curriculum. In October of that year, the Prime Minister gave a speech at Ruskin College and, by drawing on the Yellow Book, discussed a number of his concerns. These included the case for a core curriculum and the relationship between education and industry. The Ruskin Speech was followed by a series of regional conferences set up by the new Education Secretary, Shirley Williams, and were referred to as the Great Debate. The Red Book (DES, 1977b) was Her Majesty's Inspectorate's contribution to this debate. It urged a re-appraisal of what is taught in secondary schools and a curriculum analysis based on eight areas of experience was offered: aesthetic and creative, ethical, linguistic, mathematical, physical, scientific, social and political, and the spiritual. [A subsequent curriculum inquiry exercise was carried out in 41 schools in 5 LEAs in England and Wales to find out just how helpful a curriculum analysis based on these eight areas of experience might be. This is reported in Curriculum 11-16: curricular reappraisal in action (DES, 1983a)]. Also in 1977, the Green Paper Education in School; A Consultative Document (DES,1977a) was published. This Paper announced the intention of the DES to inquire into LEA's arrangements for the school curriculum and to investigate the idea of establishing a framework for the school curriculum. In the Green Paper (DES, 1977a), the term 'accountability' was used for the first time in a Government document on education. (Nuttall,1981)

'Growing recognition of the need for schools to demonstrate their accountability to the society which they serve, requires a coherent and soundly based means of
assessment for the system as a whole, for schools and for individual pupils.... In particular, it is an essential facet of their (that is LEA's) accountability that they must be able to identify schools which consistently perform poorly, so that the appropriate remedial action can be taken... Increasingly schools should assess their own performance against their own objectives as well as external criteria. In so doing they may be expected to keep under review much information useful to their governors, the local authority and HM Inspectorate'. (DES, 1977a, pp 16-17)

Two years later, the Department of Education and Science (DES) published Local Authority Arrangements for the School Curriculum (DES, 1979a). This paper, written from data collected from responses to Circular 14/77, expressed concern about the following three issues.

a) The substantial variation in policies by LEAs towards the curriculum.

b) The extent of autonomy delegated to schools in relation to the curriculum.

c) The lack of information by LEAs of their schools' curricula and the lack of routine curricular appraisal.

This report together with the conclusions of Her Majesty's Inspectorate's primary and secondary school surveys (DES, 1978; DES, 1979b) seems to have resulted in a determination to establish a nationally agreed framework for the school curriculum. In January 1980, DES issued a consultative document, A Framework for the School Curriculum (DES, 1980a). In it they suggested minimum and maximum amounts of time devoted to English, mathematics, science, modern languages, Religious Education and physical education. These subject areas would form a core curriculum. Also, it was suggested that each LEA should have a clear and known policy for the curriculum offered in its schools and should
regularly appraise how well that policy is being implemented. Her Majesty's Inspectorate published their views at almost the same time in a discussion document entitled *A View of the Curriculum* (DES, 1980b). They pointed out, among other issues, that:

a) a balanced curriculum is hampered by a shortage of certain specialist teachers and equipment.

b) a common examination system at 16+ would assist a common core curriculum.

c) there needs to be a more explicit agreement on what constitutes five years of secondary education.

The DES document *A Framework for the School Curriculum* (DES, 1980a) was criticised for being too prescriptive in, for example, its time allocation to subject areas; this was not included in *The School Curriculum* (DES, 1981) which was published a year later and sent to all schools in March, 1981. In that month, the *Times Educational Supplement* published a leader entitled 'Cautious DES prefers platitude to prescription'. Whether the DES actually considered a return to central control of the school curriculum seems unlikely. Holt (1983) does not see a formalised plot by HMI or DES to control the school curriculum and Eraut (in Simon and Taylor, 1981) argues that

'given the fate of many central initiatives in the last two decades, this is not necessarily a prospect the DES will relish ..... it has much to be gained from maintaining a position of influence without responsibility'.

(Eraut, in Simon and Taylor, 1981, p.154)

The importance of critically appraising current curricula

Although the DES may not be seeking central control of
the school curriculum, they are demonstrating concern for the nature of, and quality in, the curriculum of primary and secondary schools. Following the publication of The School Curriculum, the DES published Circular 6/81 on October 1st 1981. This Circular asked each Local Education Authority, after wide consultation and in the light of what was said in The School Curriculum (1981):

a) to review its policy for the school curriculum in its area, and its arrangements for making that policy known to all concerned;

b) to review the extent to which current provision in its maintained primary, secondary and special schools was consistent with that policy; and

c) to plan future developments accordingly, within the resources available.

Two years later, the DES Circular 8/83 invited Local Education Authorities to let the Secretary of State have

'"a summary of the steps taken by primary and secondary schools to set out their aims and to assess how far, in the authority's view, the aims adopted by individual schools were compatible with the authority's curriculum policy."

The Secretary of State also asked for steps

'"being taken and planned by the authority to seek to ensure that the curriculum was planned as a whole; that for each pupil it was balanced, coherent and suited to his or her ability and aptitude; and that the needs of pupils across the full range of ability were met in both primary and secondary schools."'

Each authority was also asked for a summary of

'"the steps being taken and planned to ensure that the curriculum is appropriately related to what happens outside school, and includes sufficient applied and practical work, particularly in mathematics and science."' (DES Circular 8/83, 1983, p.3)

The Secretary of State asked for responses to Circular 8/83
by 30th April 1984.

Clearly, the DES is committed to raising the quality of primary and secondary education through monitoring and evaluating the school curriculum, although the DES is not the only body with this concern. The Council for National Academic Awards (an institution responsible for validating courses in public sector higher education) has stated explicitly its concern with course evaluation.

'...the course together with its operation and teaching, must be subject to regular monitoring and evaluation by the staff teaching it and by the institution. The object of this monitoring is to maintain the standard of the course, and to improve, where possible, upon the means whereby the objectives of the course can be achieved.' (CNAA, 1979, Principle 1.4)

The control of, and possible approaches to, evaluating the curriculum in educational institutions will be considered in the next two chapters.

Summary
This chapter sets the historical context in which the author's development of a curriculum evaluation process took place. Bodies such as the CNAA are currently demanding regular monitoring and evaluation of courses, to maintain standards. The concern with quality in English education is not new and is traced from the Newcastle Commission of 1858 to the current pressure by the DES being placed on LEAs in England and Wales to review the curricula in their schools. It was noted that the central prescription and testing of the elementary curriculum in the late nineteenth century was progressively relaxed, until, in 1944, the control of the
school curriculum was delegated to LEAs. But, in 1963, the establishment of the short-lived Curriculum Study Group heralded the DES' growing concern with the school curriculum and, as economic recession set in during the 1970s, schools came increasingly under scrutiny and a growth in accountability was seen. The Assessment of Performance Unit was set up in 1974 and in that year came a request from James Callaghan for a report from his Education Secretary on the state of schools in England and Wales. In 1976, the Ruskin Speech initiated what has been called the Great Debate and was quickly followed by an assortment of school curriculum documents from DES, HMI and the Schools Council. Following criticism that Framework for the School Curriculum was too prescriptive, The School Curriculum was published by the DES in 1981 and sent to all schools. In June of that year, LEAs were requested in Circular 6/81 to review the curriculum in their schools in the light of The School Curriculum.
CHAPTER TWO

THE CONTROL OF CURRICULUM EVALUATION

In developing a curriculum evaluation process the question of control must be examined. It is possible to distinguish several approaches to the control of curriculum evaluation. The review of an institution's curriculum could be controlled entirely by external agents, such as inspectors, or the evaluation could become the sole responsibility of the staff of that institution, or it could be shared by the staff of the institution with one or more external agents. This chapter is concerned with these issues and with the related issue of accountability.

Externally controlled curriculum evaluation

McCormick and James (1983) argue that there are two basic approaches to evaluating the curriculum of an institution by those who are not on its staff.

i. There are those approaches which attempt to measure the processes of schooling by those outside the institution through, for example, the independent observation of teaching and learning by inspectors.

   ii. Then there are attempts to measure the "products" or "outcomes" of schooling, through the various forms of assessment of pupil performance, such as testing and public examinations.
Inspection

A long standing approach to evaluating the curriculum of an educational institution has been the inspection of that institution by HMI or by local authority inspectors. Her Majesty's Inspectorate can provide evaluation both at local and national levels. Thomas (1983), a retired HMI, lists four overlapping categories of present day inspection by HMI:

a. informal visits;
b. full inspection followed by a report to the Secretary of State which, since 1983, is published;
c. area team exercises usually on a single issue and sometimes followed by an internal report;
d. national surveys followed by a public report.

It is probable that HMI's independence from the schools they inspect, and from the LEAs responsible for running those schools, generates public confidence in their efforts to maintain standards. The 1944 Education Act gave local authorities the right to inspect their schools, but LEA inspectors do not have the independence exhibited by HMI. The LEA inspector is clearly associated with the local authority that is employing the teacher(s) being inspected. In a study of local authority advisers and inspectors, Bolam (1978) reports that the bulk of a local authority inspector's work involves helping teachers, although half were involved in general inspections too. The National Association of Head Teachers (O.U., 1982.) has reported on the difficulties of the
dual role of helper and inspector.

A key aspect of both local authority and HM inspection is that the evaluation is carried out by experts outside the institution and hence the agenda of the evaluation comes under external control. An evaluation under the control of external agents will probably be seen by the parents, and other interested parties, as having a greater credibility than one under the control of an institution's staff.

Public examination results

The public examination results of a school have, of course, always been of interest to the staff and pupils of that school but now a wider audience has access to such results. All maintained schools in England and Wales, since the 1981 Education Act, must publish their examination results. Their publication give them force as a form of external evaluation, for presumably, this Act was passed to enable parents and others outside the school to evaluate its success and, perhaps, to compare it with others and then to make a choice whether to apply for a place at that school. This Act has laid down that the following information must be published.

i. The policy of the school when entering pupils for public examinations.

ii. The examinations commonly entered.

iii. The appropriate year group taking the examinations.

iv. The number of pupils in the appropriate year group by subject, grade, and the total number in each year.
But there is relevant information which does not have to be made available and, in the absence of this information, parents might come to an unfair and an unjust judgement about the school. For example, the law does not require a school to provide information about its intake characteristics. Two schools might be quite different in this respect and hence invalid conclusions, arising from examination results alone, might emerge.

Testing

Testing, in forms other than examinations, has become a common form of curriculum evaluation in the USA. According to House (1978), the importance of testing in the USA derives from demands from federal and state accountability systems for measurable learning outcomes. These are required since such outcomes are assumed to be the indicators of the quality of the schooling. This is the main distinction between testing and examinations; testing is concerned with attempting to evaluate educational provision, whereas examinations are concerned with assessment of individual pupil performance. As long ago as 1967, the USA set up the National Association of Educational Progress (possibly a precursor of the DES' Assessment of Performance Unit). From the beginning, NAEP administered its tests by matrix sampling, with no more than 12 pupils tested in any one school and the schools chosen to form a representative set. Testing was at four stages: age 9, 13, and 17 years old and young adults of 26-35. NAEP evaluates performance in ten curricular areas. The DES has
shown interest in testing in the USA. (Holt, 1981, p. 41) At the state level in the USA, testing is well established and has been so, in some cases, since the 1960s. By 1978, most states had programmes of basic skills as the back to basics movement took hold. By 1980, the TES (15th Feb. 1980) reported that, of the 50 states, 37 had introduced minimum competency testing in some form. In 19 states, minimum competency testing is linked to high school graduation. At grade 9, in order to get a leaving diploma, pupils must show minimum competencies in basic skills in reading, writing and mathematics. Criticisms of the American approaches to national and local testing programmes was mounting in the USA through the seventies. Stake (1976) argued that relevant school evaluation was more a matter of case study, with its emphasis on the context of the school, rather than a highly statistical report. Perhaps the biggest fear of testing programmes is the risk of teachers teaching to them.

Testing on a national basis has developed in this country. An announcement to set up the Assessment of Performance Unit came in August 1974. Its aim was announced then as the promotion and development of methods of assessing and monitoring the achievement of children at school, and to seek to identify the incidents of under-achievement. By 1975, the then Chief HMI, Brian Kay (1975), had indicated a wider role for the APU. It would concentrate on standards in six kinds of cross-curricula areas.
Mathematical
Scientific
Ethical
Aesthetic
Physical

These were altered later, for example, 'ethical' became 'personal and social'. Kay (1975) is careful to state that these are only 'roughly identifiable areas'. Nevertheless they became the basic structure for the later programme. By 1977, the intention of the APU was clear. It was to show trends in the levels of pupils' performance over several years. It was not the intention to test every child in an age group, nor even every child in a class, 'light sampling' was the phrase used. Reassurances were given that no child, class, school or LEA would be identifiable in the published results. In 1979, the Conservative Manifesto announced the following.

'We shall promote higher standards of achievement in basic skills. The Government's Assessment of Performance Unit will set national standards in reading, writing and arithmetic, monitored by tests worked out with teachers and others and applied locally by education authorities. The Inspectorate will be strengthened.'

(Lawton, 1980, p. 143.)

There may be a hint here at a reduction in the areas to be monitored. Whether that is the case or not, a decision was taken, during Mark Carlisle's time as Secretary of State to exclude personal and social development from the monitoring. Also, by 1984, little had appeared on the aesthetic area.

The statistics operated by the APU have come under criticism. A detailed criticism is inappropriate here. In
brief, (after Lawton, 1980) the APU employs the Rasch (a Danish statistician) model, which relies on item banking. An item is a question the answer to which can be prespecified, so that all markers will grade it in the same way. A bank is a collection of items which can be interchanged to construct parallel tests.

These approaches to testing assume that it is possible to identify test items of equal difficulty and then to sort them into levels of difficulty. Also, once these levels of difficulty have been established, it is assumed that they are the same for all children, irrespective of what or how they have been taught.

Many LEAs have started blanket testing of this kind and one of the dangers of blanket testing is that it is often difficult to resist pressures to publish such results and to identify schools in a spurious rank order. This is a dangerous procedure at any time, especially when falling rolls are operating and schools are being suggested for closure.

Hence blanket testing of the kind, operated by the APU or carried out by an LEA, needs careful scrutiny. All must be aware of possible unintended consequences and the technical difficulties involved.

The internal/external dimension

In an article by Stake (1976) various dimensions in curriculum evaluation are explored; one of these dimensions is 'internal/external'. Elliott (1980) claims that in the
past, the emphasis has been put on external evaluation such as inspection. But, as he says,

'...the objectivity, credibility, and speed of the process has to be set against their short lived effects...
and...
their lack of involvement of staff, and the separation of any of the proposals for improvement arising out of the evaluation from the people who have to carry them out.'

(Elliott, 1980, p. 12)

The importance of self-evaluation, which Elliott's criticism of external evaluation implies, is not new. For generations, teachers have engaged in an intuitive evaluation of the quality of their teaching. But the call for systematic school self-evaluation is fairly recent and, as Elliott (1980) notes, school self-evaluation is still in its infancy. Time will be needed to develop confidence and competence in its use.

**LEA initiated school self-evaluation**

An interesting transition between externally controlled school evaluation and evaluation controlled from within a school, is the LEA initiated school self-evaluation.

Elliott (1981) carried out a survey of school self-evaluation schemes in which LEAs were involved. He found that of the 105 LEAs that replied (out of 107) 69 said they had initiated discussions on the topic. In almost every case (63 LEAs) the discussions were directed by an LEA official and, in 21 of these LEAs, deliberations had led to the production of agreed guidelines for school self-evaluation. It is worth noting that none of these guidelines had been designed by teachers alone, although they had contributed to 12 of the 21
schemes. Nine of them were written solely by LEA officials. (Elliott, 1981, Appendix 2.)

The ILEA published *Keeping the School under Review* in 1977. This was not the first of the LEA guidelines, but it was probably the most influential. The booklet consists of a checklist of questions that the staff as a whole, or individual members, ask of themselves. Use of the booklet was voluntary and no written report was required. But by 1982, pilot schools were asked to prepare annual reports for parents and governors. It is also proposed that, every five years, secondary schools will be asked to carry out a more searching review which would be commented upon by Inner London Education Authority inspectors. Experience gained in the pilot schools was used to amend the first set of guidelines.

Oxfordshire LEA has also produced a set of guidelines called *Starting points in Self-evaluation* which calls for a formal report every four years. This, Nuttall (1981) points out, leads to a report arriving at the Oxfordshire Education Offices every two and a half days. He wondered how this vast flow of information was handled. Nuttall (1981) gave a clue to the answer to this problem.

"Above all the feeling is that the process of carrying out the self-evaluation is what is really important, plus the follow-up and continuing evaluation; the product, the report, is relatively unimportant."

(Nuttall, 1981, p.13)

ILEA and Oxfordshire provide two examples of LEAs who have devised procedures for self-evaluation intended to lead to
professional development and which serve to give an account to parents, governors and others. In contrast, Rochdale LEA has decided not to require a report and instead concentrates on professional development. In May 1980, Rochdale LEA stated that,

"by deliberately avoiding a reporting document we hope to avoid regression to a norm and allow flair and vision to remain effective." (Rochdale Education Authority, May 1980) (in Nuttall, 1981, p.13)

Rochdale Education Authority has produced a document to initiate and support discussion but it is subject to modification and amendment by participants. It is stressed that the process of discussion is of paramount importance.

It is interesting to note that in Elliott's (1981) survey, 45 LEAs (43%) answered 'no' to the question - 'Have discussions within the authority resulted in the production of agreed guidelines?'

Some gave reasons for their answer pointing out that, since each school is unique, a checklist of questions for all schools seemed inappropriate. Other LEAs stated that schools were developing their own self-evaluation programme.

Issues arising from LEA initiated school self-evaluation


a) Those schemes requiring formal reports to the LEA, illustrate how the contractual aspects of accountability can dominate, perhaps merely leading to a ritual.

b) There is the problem of confidentiality. No-one would deny the right of outsiders to know the strengths and weaknesses
of an institution, but it not easy to see just how far this should go. Some LEAs have assured teachers that reports derived from self-evaluation procedures are confidential. Clift (1982) gives an example from Oxfordshire, where a governing body was only given an hour to read the report before discussing it. The report had to be returned immediately after the meeting. (Clift, 1982, p. 38)

c) There is the difficult problem of the large number of reports received by the LEA.

d) Clift (1982) has raised doubts about the reliability and validity of these LEA schemes, since it is so difficult to define what is meant by "quality in education" and to find empirical indicators of it.

School initiated self-evaluation

So far, the examples of school self-evaluation have been LEA initiated. Nuttall (1981) cites an example of a school self-evaluation initiated by the school itself. Carisbrooke High School on the Isle of Wight, carried out two externally assisted evaluations, one in 1976 and another in 1978, based on criteria developed within the school.

McCormick and James (1983) give other examples of school initiated self-evaluations; Quintin Kynastion School, London; Sir Frank Markham School, Milton Keynes; Priory Roman Catholic School, Nottingham; and Combe Pafford School, Torquay. They state that there are relatively few published case studies of school based evaluations. This encouraged James (1982) to publish an advertisement for
details of such case studies to be sent to her. As a result of replies received, she was able to publish details of 50 activities of this kind.

An important example from outside the UK is the Teachers as Evaluators Project (1980) in Australia. Since 1977, this Project has been producing trial materials designed to support curriculum evaluation in schools.

Towards effective school self-evaluation

Simons (in Lacey and Lawton, 1981, p.116) believes that effective school self-evaluation encourages a high degree of participation and the sharing of knowledge. According to Simons, the major justification of this approach is enhanced professionalism and practice. She feels that self-evaluation should be a continuing part of professional practice and not just a short term response to outside pressures. Simons' observation of much current school self-evaluation is that it is informal, non-systematic and private to individuals. Teachers must be given the time and opportunity to build up the necessary evaluation skills. Simons describes some of the difficulties teachers experienced in school self-evaluation.

(1) Instead of extending their existing repertoire of skills, such as questioning, observing and making informed judgements, she found that teachers sought more formal means of data collection and analysis.

(2) Simons felt that there was no carefully worked out procedure with regard to access to, and release of, data.
The teachers did not have a precise enough language with which to express and share their curricular concerns. Time and motivation were important factors. It seemed to Simons that a catalyst from inside or outside the school was needed to initiate and maintain the self-evaluation. A variety of supports are necessary to sustain the evaluation process. She identified the following supports as significant.

a) In-service course support - on the need for evaluation, the concepts of evaluation, and the advantages and disadvantages of different approaches.

b) On-site support - in the form of acceptance by the headteacher and colleagues (with special reference to the importance of the exercise, time and structure needed)

c) Consultancy support - advice on design, testing, interviewing, processing data and so on.

d) LEA support - in-service courses, extra resources to buy release time, consultancy and materials.

Credibility can be a problem. Some form of external validation may be necessary, if this is to be attained. (Simons, 1981, in Lacey and Lawton, 1981, p.138).

It may be argued that the credibility of school self-evaluation is low because this approach lacks objectivity. Stenhouse (1975) writes convincingly about the problem of objectivity.

'The problem of objectivity seems to me to be a false one. Any research into classrooms must aim to improve teaching. Thus any research must be applied by teachers, so that the most clinically objective research can only feed into practice through an interested actor in the situation. There is no escaping the fact that it is the teacher's subjective perception which is crucial for practice since he is in a position to control the classroom. Accordingly we are concerned with the development of a sensitive and
self-critical subjective perspective and not with an aspiration towards an unattainable objectivity. (Stenhouse, 1975, p. 157)

Audited self-evaluation

In an educational context, an audited self-evaluation is a middle way between internal control in a school initiated self-evaluation and external control illustrated by inspection. Clift (1982) observes that the idea of audited self-evaluation is taken from business and commerce. A public company must prepare a statement of its financial affairs and have it independently audited. Two elements of this process are important for an educational context. First, the company prepares its own statement and, second, those from outside that company check the authenticity of its statement. Using this approach teachers would prepare the report and its veracity would then be checked by appropriate people from outside the institution. These ideas are not new to education. Mode three GCE and CSE examinations are subject to external moderation and CNAA validated courses in higher education must be internally reviewed before being submitted for re-validation. The CNAA appointed visiting party scrutinises the internal evaluation of the course by, for example, questioning past and current course members. The newly developed CNAA’s ‘partnership in validation’ also adopts procedures similar to an audited self-evaluation. Becher and Maclure (1978, pp 233-236) consider the peer validation process of the CNAA as a possible model for audited self-evaluation in schools. McCormick and James
(1983) cite the accreditation process in the USA as, in their view, a better model for audited self-evaluation in schools in this country. Accreditation of schools in the USA is carried out by a number of self-regulating bodies composed, in part, by representatives of schools already accredited. (Unlike the CNAA, the institution, rather than a course, is validated, although the Partnership in Validation proposals by CNAA are moving in this direction.) The first stage of the accreditation process is a self study conducted by the school and uses provided guidelines. Some use those published by the National Study of School Evaluation. The self-study is followed by a visiting team of teachers, state or district education staff and other educationists. The accreditation body has the right to choose the composition of the team but the school principal can veto any member. The visiting team attempts to evaluate the school in its own terms given its students, environment and objectives; although the team must bear in mind a set of standards which must be met before the school can be accredited. The standards are expressed in fairly general terms: the consistency of the curriculum and the aims of the school, the subjects that should be available, the procedures that should be in operation, and so on. On the basis of a report to the association, the school is, or is not, accredited. After accreditation, the school principal is expected to provide annual reports to the association to indicate continuance of quality of provision.

It would not be easy to transport this process to English schools, for several reasons, one being that no such self-
regulating body exists that could carry out such a function. McCormick and James (1983) illustrate this approach with an Australian school. Huntingdale Technical School in Melbourne agreed with the State Education Department to an evaluation extending over several years and under the control of the school's own 'School Council'. This represented elected members of the parents and students, nominated members from voluntary groups, members of the school staff, local education department and local government. The School Council had overall control of the evaluation. The first stage of the process resulted in a document giving a self-appraisal of the school. The next stage was a visit from a Planning and Review Board set up by the School Council and composed of educationalists and others. This Board spent a week in the school, observing and discussing with teachers and students, after receiving a copy of the self-review document. The Board held open meetings to reassure staff of their approach and made a final report at the end of the week. After this, the School Council held a seminar on the process out of which came resolutions for change.

Accountability and the control of curriculum evaluation

In the previous chapter it was noted that the D.E.S. sees accountability as having an important role in improving quality and raising standards in English education. This was made explicit in the Green Paper published by the D.E.S. in 1977.

'Growing recognition of the need for schools to demonstrate
their accountability to the society which they serve requires a coherent and soundly based means of assessment for the educational system as a whole, for schools, and for individual pupils...In particular, it is an essential facet that they must be able to identify schools which consistently perform poorly...

(DES, 1977, p.16)

McCormick and James (1983) write

'Today (the early 1980s), the concept of educational evaluation is often so interwoven with the concept of accountability that the two are difficult to distinguish; indeed Nuttall (Open University, 1982, Block 1), suggests that the distinction may be untenable'.

(McCormick and James, 1983, p.7.)

MacDonald (1979) explains the relationship between accountability and evaluation as

'evaluation, the means by which accountability is rendered'. (MacDonald, 1979, p.35).

Becher claims that, although accountability and evaluation are closely inter-related, the relationship is not symmetrical.

'That is to say, accountability presupposes evaluation, but evaluation does not imply accountability. It would be not merely odd, but positively unacceptable, to hold individuals or institutions to account for what they have done or failed to do, without first trying to make an informed judgement of the merits of their performance. But it is not the least uncommon to make a judgement of performance which is not then used to call individuals or institutions to account'. (Becher, 1979, p.63).

Nisbet (1978) lists five strategies that can be used as accountability procedures:

testing,

monitoring of standards by conventional examinations,

inspection,

the development of standardised pupil record systems and self-assessment (Nisbett's term for school self-evaluation).

Nisbet suggests that these strategies can be located on a
hard-soft spectrum. He locates testing at the hard pole where there is a tendency for procedures to be external, formal, judgemental and product-orientated. At the soft pole, where self-assessment is located, the procedures tend to be internal, informal, descriptive and process-orientated.

**Types of accountability**

Eraut (1981) distinguishes between three types of accountability.

a) Moral accountability - that is, answerability to one's clients.

b) Professional accountability - responsibility to oneself and one's colleagues.

c) Contractual accountability - where one is held legally accountable for one's actions. One has a duty to meet certain obligations and a liability to incur sanctions if one fails in that duty.

Eraut points out that teachers do not have a contractual relationship with parents or pupils, but they do have a moral obligation to them and, in practice, this probably bears more heavily on their minds than the legal one. Teachers' contractual accountability is to their employers which in most cases is the local education authority. A difficulty with professional accountability is, as Eraut indicates, that teachers do not have an agreed professional code of conduct and there seems little agreement as to what competent teaching means. According to McCormick and James (1983) school self-evaluations are examples of professional
accountability whereas inspections and local authority schemes are examples of responses to the demands of contractual accountability.

Criteria for accountability procedures

Various criteria have been suggested for judging the adequacy of an accountability procedure and, by implication, the system of evaluation it presupposes. Nuttall (1982) drew together what he thought were the clearest features of Nisbet's (1978), Eraut's (1978) and Becher and Maclure's (1978) criteria, and proposed the following list of criteria.

That accountability procedures should

a) be fair and perceived as fair by all parties involved;

b) be capable of suggesting appropriate remedies;

c) yield an account that is intelligible to its intended audiences;

d) be methodologically sound;

e) be economic in its use of resources;

f) be an acceptable blend of centralised and delegated control.

(Nuttall, 1982, p. 30)

McCormick and James (1983) argue that the individual criteria will vary in importance in terms of the concept of accountability that the procedure is seeking to satisfy. Perhaps criterion b. above, the capacity for suggesting appropriate remedies, is the most significant, for, as McCormick and James (1983) say, there is 'little point in an evaluation revealing educational
provision to be unsatisfactory if the question of how the situation may be remedied has not been considered.' (McCormick and James, 1983, p. 26)

This issue of suggesting remedies for the weaknesses identified in a curriculum evaluation is an important matter.

**Bringing about appropriate curriculum change**

McCormick and James (1983) claim that effective change depends on the commitment of those required to implement it, and that commitment can only be achieved if those persons feel they have control of the process. They comment on how interesting it is that

'...many leading advocates of school-based evaluation have themselves been involved with large-scale project evaluations at some point in their careers, for example, Elliott, MacDonald, Shipman and Simons. Some of these now strongly argue that evaluation which is initiated and conducted by teachers, in response to their own perceived needs and interests have a greater capacity to promote professional development, because the role of teacher is extended but their autonomy preserved.' (McCormick and James, 1983, p. 41)

This carries with it a particular conception of the way change is brought about. That is

'teachers and schools will readily seek to improve their practice if they regard it as part of their professional responsibility, whereas they are likely to resist change that is forced on them.' (McCormick and James, 1983, p. 27)

McCormick and James (1983) refer to the three broad strategies for change in social systems identified by Bennis, Benne and Chin (1969)

1. **Power - coercive strategies:** based on the intervention of those with legal authority to alter conditions.

2. **Empirical - rational strategies:** based on the assumption that people are rational beings who will change their ideas
or behaviour if the effectiveness of a concept or practice is clearly demonstrated by research.

3. Normative - re-educative strategies: based on the assumption that patterns of action are maintained by the commitment of individuals to socio-cultural norms. Thus change only occurs when individuals are encouraged to change their normative orientations in attitudes, beliefs, value, knowledge, skills, roles and relationships. In order for this to happen it is necessary to 'actuate forces within the system to alter the system'. (McCormick and James, 1983, p.27)

McCormick and James (1983), although admitting that there is little empirical evidence to suggest that one strategy is more effective than the others, draw an analogy with the implementation of curriculum projects. They claim that the history of what has happened to many of the large centralised curriculum projects and the growth of school based curriculum developments are a strong argument for suggesting 'that the periphery (the schools and teachers) rather than the centre (government bodies or centralised curriculum development agencies) is the prime focus for change. Hence the normative - re-educative strategy may have more to offer in terms of improving education'. (McCormick and James, 1983, p.32)

However, there are two points for caution to consider with regard to this argument. Firstly, when talking of professional development, it is important to distinguish, according to Hoyle (1975), between procedures designed to improve professional practice and those concerned with improving teacher status. Secondly, as McCormick and James argue, it cannot be denied that compulsion can bring about
change. Children are compelled to go to school yet no one would suggest that no change takes place.

Simons (1981) proposes that school self-evaluation should be an integral part of professional practice. But she argues strongly that, at least in the short term, school self-evaluation should be separate from accountability demands and scrutiny from those outside the school. She gives the following reasons to support her argument. Firstly, self-evaluation is threatening and can raise controversy. Secondly, protection from the scrutiny of those outside the institution may be necessary to give the staff time to develop skills in curriculum evaluation and self-accounts. The third reason relates to the use to which the self-accounts may be put. It is unlikely that a school will open itself to self criticism, in order to improve practice, if there is a possibility that the criticism will be used to put the institution, or individuals within it, at risk.

Nevertheless Simons stresses she does not believe that schools should never be open to public scrutiny. The issue, as far as she is concerned, is one of timing, confidence and credibility.

Elliott (1979) argues that there is a natural tendency for persons to idealise their own practice. However, this danger does not justify, as far as Elliott is concerned, the transfer of power from teachers to other groups. Elliott argues for a 'responsive mode' of accountability in contrast to a 'social control mode'. (Elliott, 1979, p. 68).
Elliott (1979) sees institutions capable of responsive accountability as

'able to produce accurate accounts of their practices, able to engage in genuine discussions with outside groups about these practices, and able to modify them in light of such discussions'.

(Elliott, 1979, p. 68)

In order to counteract the lack of public confidence in school self-reports, Elliott suggests the use of external auditors who have the confidence of both those inside and outside the institution.

Simons, at least in the short term, takes a similar view

'In time, credibility may cease to be an issue as more self-reports become available and are seen to be useful. For the moment, however, when the criteria for assessing the worth of such reports have yet to evolve, some form of outside validation may be necessary to secure credibility'.

(Simons, in Lawton and Lacey, 1981, p. 139)

However Elliott admits that auditing may be only a partial solution to the problem of biased accounts, as it fails to take into account the political context and the continuing problems of 'to whom' and 'for what' teachers are accountable.

Bring (1984) discusses these issues in his paper, 'Confidentiality and the Right to Know'. He claims that, all things being equal, openness, availability of information and public criticism are good for getting rid of error and sharpening the perception of the truth. But the right to know, he argues

'requires some examination of the consequences of establishing such a right in particular cases.'

(Pring, in Adelman, 1984, p. 8)

The right to know may lead to undesirable results or clash
with other principles such as confidentiality. Pring proposes that the main need, as in most moral issues, is that whether there is a right to know should be argued in terms of the particular context.

The control of the proposed curriculum evaluation process

Although initially attracted to the idea of control being the sole responsibility of the staff of an institution, the author agrees with Simons (1981) that school based curriculum evaluation can benefit from external support. But, the author believes with Simons (1981) that curriculum evaluation is most effective when it is initiated and carried out by the staff of an institution according to their own perceived needs. Audited self-evaluation permits the staff of an institution freedom with regard to the focus of the review, and the release of information, while improving the credibility in the eyes of the public and preventing, to some extent, self-deception and self-complaisance.

Summary

In this chapter various forms of control over curriculum evaluation have been examined and relationships between accountability and the control of evaluation considered. Audited self-evaluation is argued as the favoured approach for the proposed curriculum evaluation process.
CHAPTER THREE
SOME APPROACHES TO CURRICULUM EVALUATION

In this chapter a selection of theoretical and methodological approaches to curriculum evaluation are examined.

The experimental approach

The experimental methods of natural scientists have had a major influence on educational research and are of significance when considering approaches to curriculum evaluation.

The experimental approach may be described as hypothetico-deductive:

i. observations are followed by one or more hypotheses;

   ii. predictions are then designed based on these hypotheses and attempts made to test them in a controlled experiment;

   iii. further hypotheses emerge from the experiments and may be incorporated into 'theory' which attempts to explain the phenomenon under study;

   iv. further hypotheses are developed from this theory and more evidence is collected and so on, through what is a cyclical process, with deductions from a hypothesis leading via observations to its endorsement (or more precisely a failure to falsify it) or to its replacement by another hypothesis explaining the observations better. Educational researchers working in this paradigm concentrate on designing
experiments which rigorously and unambiguously test the hypothesis under consideration. (Clift, 1982)

The ethnographic approach

This approach, according to Clift (1982), focuses on the processes by which hypotheses are formed. The ethnographic researcher is concerned with the means by which the hypotheses come to be formulated, rather than the means by which they are tested. It is argued that the variables found in educational research, such as attainment, teaching method, and so on, are closely bound up with the particular educational context in which they are employed. Hence this approach is described by Cohen and Manion (1980) as

'objective, external, quantifiable, explanatory, publicly verifiable, and replicable.'
(Cohen and Manion, 1980, p.28.)

whereas the experimental, normative researcher may be described as

'subjective, internal, qualitative (that is expressed in symbolic form - language or gesture for instance) interpretative, unique and negotiable.'
(Cohen and Manion, 1980, p.28.)

The emphasis placed by ethnographers on the research setting raises difficulties as to how far findings may be generalised into theory.

Idiographic and nomothetic inquiries

These two approaches reflect the ethnographic and experimental schools of thought. The idiographic inquiry focuses on the case study, seeking the unique features of the
case and concentrating on explanations which take particular note of the context of the educational research. In contrast, nomothetic enquiry focuses on specific attributes that are common to all, or a significant number, of individuals in a population. This approach seeks to make general statements about relationships between various factors across a whole population. Many of these methodological issues emerge in the following strategies and approaches to curriculum evaluation.

Several attempts have been made to list the various approaches to curriculum evaluation (Lawton, 1980). The following is a selection of those approaches and has been chosen to illustrate the main trends in curriculum evaluation. These approaches are not given as a taxonomy of evaluation models, but merely to show the range of approaches found in the literature. Similar characteristics may be found in more than one approach.

**The objectives model of evaluation**

The objectives model proposes that clarity can be achieved by expressing the general aims of a curriculum as highly specific behavioural objectives, each of which must describe an observable aspect of the learner's behaviour, or a product which is the consequence of the learner's behaviour. (Popham, 1969, p. 35). This approach to curriculum design and evaluation has a long history going back in the USA to Bobbit in the 1920s. Stenhouse (1975) gives the following quote from Bobbit.
'Human life... consists in the performance of specific activities' and 'Education which prepares for life is one that prepares definitely and adequately for these specific activities. (Stenhouse, 1975, p. 52)

Bobbit's aim was to specify educational activities as educational objectives and to develop and apply assessment techniques that would permit learning outcomes which could be reported in quantitative terms. According to Lawton (1983) Bobbit's influence has been considerable. Stenhouse (1975) claims however, that

'the most lucid and straightforward account of the use of objectives in curriculum development remains that of Tyler' (Stenhouse, 1975, p. 53)

Tyler says

'Education is a process of changing the behaviour patterns of people. This is using behaviour in the broad sense to include thinking and feeling as well as overt action. When education is viewed in this way, it is clear that educational objectives, then, represent the kinds of changes in behaviour that an educational institution seeks to bring about in its students.' (Tyler, 1949, p. 5)

Perhaps the most comprehensive review of literature on the objectives model can be found in MacDonald-Ross (1973).

A major criticism of this approach arises from expressing learning outcomes as highly specific behavioural objectives. The assumption that such expressions of specificity are always an advantage in the teaching and learning situation has been questioned. Teaching is, at least to some extent, a 'voyage of exploration', where the outcomes cannot always be precisely stated. Precision may be possible where a simple set of skills are being taught but less possible in aspects of creative subjects such as the fine arts. MacDonald-Ross (1975) also refers to the problem of the level of
specificity. Some ambiguity is present in all objectives and the response to this problem has been to specify the objectives even further. Hence, there is the problem of arriving at the criteria for deciding at which level of specificity, objectives should be finally pitched. The behavioural objectives approach to evaluation, Stenhouse (1975) observes, is basically one of measurement. In this interpretation of evaluation, behavioural objectives, it is argued, make it possible to develop criterion-referenced tests rather than norm-referenced ones. (Criterion-referenced tests indicate an individual's performance in relation to a given standard whereas norm-referenced tests show how an individual performs relative to a group.) In a behavioural objectives form of evaluation a teacher would invite his work to be judged using the performance of students measured by criterion-referenced tests based on the teacher's pre-stated objectives. These tests would need to be administered to a statistically acceptable sample of students. It might also be considered necessary to have a control group and an experimental group.

Such an approach to curriculum evaluation tends to assume that education can be reduced to a checklist of learned responses, rather as Skinner's pigeons might be trained. This model has its roots in behaviouristic psychology which emphasises persons as beings who 'passively' respond to stimuli rather than having interpretative, creative facilities. In this model, the objective becomes the response
being sought in the learner and the teacher's task is to provide the appropriate stimuli to bring about that response. The teacher's role tends to be seen as an instructor and the student as a recipient.

The classical or experimental model of evaluation

A model of evaluation with some similarities to the behavioural objectives approach is the classical research, or the experimental model. This treats the problem of evaluating a curriculum by treating the problem as experimental research would be conducted. Here the investigator deliberately controls and manipulates the conditions which determine (or are thought to determine) the events in which he or she is interested. A simple experiment would involve changing the value of one variable (called the independent variable) and observing the effect of that change on another variable, the dependent variable. Cohen and Manion (1980) illustrate this in an educational setting; for example, a new method (the independent variable) in arithmetical computation is evaluated by timing how long (the dependent variable) an experimental group takes to do 20 sums. The control group (not exposed to the new method) is also timed how long they take to do 20 sums. This model presents technical difficulties, because a class of children presents the classical researcher with far too many variables to design an experiment in this way. Such an approach requires strict controls which may raise ethical difficulties too.

'To attempt to simulate laboratory conditions by manipulating educational personnel is ....... dubious
ethically' (Parlett and Hamilton, in Tawney, 1976, p. 87)

In this approach, and in the behavioural objectives one, a common research strategy is to use a 'pre-test/post-test' design to yield gain scores. This leads to a concentration on the collection of quantitative information and to a neglect of other data which may be more significant. The collection of this quantitative data has been much influenced by psychometrics and, in particular, on the use of standardised measures. But, according to Williams

'It was rarely the case that standardised measures which exactly fitted the problem under consideration were already available'.

(Williams, in Lacey and Lawton, 1981, p. 74)

Hence the evaluator was often in a position where he had to choose between standardised measures with high reliability and good validity but a poor fit with the project under evaluation, or to use ad hoc tests specially designed for the purpose in hand but often wanting in reliability and validity. In the analysis of these results, statistical significance was usually tested by parametric methods. These assume, for example, that the distribution of results conforms to the normal distribution. Sometimes these assumptions could not be met. In these instances it is safer to use statistics which do not rest on assumptions which cannot be met.

The illuminative model of evaluation

In December 1972, a conference was held in Cambridge to explore the criticisms of, and the shift away from, the experimental modes of evaluation. This followed a spate of
published papers indicating an increasing resistance to these forms of evaluation [for example, Guttentag (1971), MacDonald (1971) Taylor (1971)] The Cambridge Conference, as reported by MacDonald and Parlett (1973) produced a statement summarising major shifts in concern. They made the following comments.

a) Traditional methods of evaluation have paid too much attention to attempts to measure 'student gains' and too little attention to the whole educational scene in a particular context.

b) The gap between educational research and the school situation has been underestimated.

c) Curriculum evaluation should be alert to the requirements of different audiences.

d) The design of the evaluation should be flexible enough to be responsive to unforeseen events in the study. Parlett and Hamilton (1976) suggest a 'progressive focussing' rather than 'pre-ordinate design'.

e) The value position of the evaluator should be known to all concerned.

(MacDonald and Parlett, 1973, in Lawton, 1980, p116.)

This report marked the movement towards 'illuminative evaluation'. This term was taken from the writings of Trow (1970) arising from research at Massachusetts Institute of Technology. According to Parlett and Hamilton (1976) the illuminative evaluator

'is concerned to familiarise himself thoroughly with the day to day reality of the setting or settings he is
studying. In this he is similar to social anthropologist or to historians. Like them he makes no attempt to manipulate, control or eliminate situational variables, but takes as given the complex scene he encounters. His chief task is to unravel it; isolate its chief features; delineate cycles of cause and effect; and comprehend relationships between beliefs and practices, and between organisational patterns and the responses of individuals'.

(Parlett and Hamilton, in Tawney, 1976, p. 92)

Clearly, this approach stands in the ethnographic or social anthropological paradigm rather than in the experimental one.

The illuminative evaluator is concerned to take account of the wider contexts in which educational factors operate. Perhaps the most difficult role of the illuminative evaluator is to select the most suitable techniques. Parlett and Hamilton (1976) write of a three stage approach to illuminative evaluation:

'Investigators observe, inquire further, and then seek to explain. Within this three stage framework, an information profile is assembled using data collected from the following techniques: observation, interviews, questionnaires and tests, documentary and background sources'.

(Parlett and Hamilton, in Tawney, 1976, p. 92-93)

Parlett and Hamilton (1976) and Lawton (1980) say that concern has been expressed over the subjective nature of this approach. A vigorous attack has been made by Parsons (1976, 1980) who criticises 'new wave' evaluators for depending

'for its reputation and enactment on personal skills rather than professional or disciplinary expertise.'

(Parsons in Lawton and Lacey, 1981, p. 62)

Smetherham (also in Lacey and Lawton, 1981), although having some sympathy with Parsons, contends that it is the personal/social skills dimension that is a necessary part of the evaluator's expertise. The tension between the relative
merits of 'objective' and 'subjective' evaluation continues to exist. Those who call for objective evaluation seem to ignore that all research requires skilled human judgements and hence is vulnerable to prejudice or to experimenter bias or simply to human error. It is sometimes argued that the illuminative evaluator ignores objective or 'hard' data. Williams (1981) emphasises that 'hard' data is not ignored by the new wave illuminative evaluators. He asserts that a dichotomy between the 'measurers' and the 'illuminators' is a false one. And Parlett and Hamilton (1976) have always insisted that measurement is one of the techniques available to illuminative evaluators. The illuminative approach is, in a sense, an eclectic approach. Williams (in Lacey and Lawton, 1981) argues for what he calls 'a truly eclectic approach to evaluation'. He argues that curriculum evaluation is a complex process concerned with answering many kinds of questions. Some of these questions are susceptible to empirical methods, others are not. Williams emphasises that he is not urging a return to the purely psychometric and experimental approaches, but he does want evaluators to remember that there remain areas to which such approaches are appropriate. He recommends the unobtrusive measures offered by Webb (1966). Williams also stresses that the 'new wave illuminative' evaluators do not reject the traditional methods of measurement. But they are interested in describing the whole context of the evaluation study and, where appropriate, they do use 'hard data'. The illuminative
approach should not be thought of as a form of evaluation in itself, but as a holistic approach encapsulating a range of methods. There are many similarities between the illuminative approach and what is called the case study approach and it is not always possible to see a clear distinction between them.

The case study approach

Adelman (1976) reported on a second Cambridge Conference which focused on 'the case study' approach to evaluation. They suggest possible advantages with this approach. The case study approach permits the complexity, subtlety and individuality of a social situation to be considered. When carefully carried out, case studies are capable of showing the various perspectives and alternative interpretations possible in social situations. Lawton (1980) gives, as an early example of a case study, the evaluation of the Keele University Integrated Studies Project (funded by the Schools Council). This was set up in 1968 to investigate an integrated approach to the teaching of the humanities in secondary schools. It was evaluated twice. Firstly by Jenkins (in Schools Council, 1973) and secondly by Shipman (1974), who was funded by a body independent of the Schools Council, the Nuffield Foundation. Jenkins' evaluation illustrates some important aspects of the shift in methodology occurring at this time. The team

'took account of the individuality of schools, seeing their work as extending the range of choice available to teachers. The possibility of diverse interpretation was not without its problems: it meant that the team had no experimental control over the significant variables close to the kind of life we can observe in classrooms .......

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This virtually dictated a reliance on participant observation; .... the observer entered and shared the sub-culture being investigated. Not only did the participant teachers become observers, but the observing project members became participant (Jenkins, 1973, p.75).

A wide range of methods were adopted. These included a description of aims, objectives, environment, personnel, methods, content and outcomes; as these were evident in individual schools. There were personal judgments about the quality and appropriateness of materials and there were process studies of the programme in action. In these process studies

"they aimed at an interpretative description of how trial school teachers actually operated in the integrated studies time" (Jenkins, 1973, p.77)

In addition to these evaluation methods, there was a local team of advisers, teachers and lecturers who developed their own questionnaires for those involved in the evaluation of this project. In his evaluation of this case study, Shipman stresses that those participating in the project had quite different perspectives of its purpose and quality. His findings demonstrate so well how difficult it is to establish what the truth is concerning the success or failure of a project. Shipman writes.

"Everyone sees a different moving picture of an event in which all are involved. There are differences in interpretation and disagreement about what actually happened, but these are not necessarily right or wrong." (Shipman, 1974, p.10).

The political nature of evaluation

House (1973) opens his book on curriculum evaluation with the observation that evaluation is unquestionably a political
Evaluation is always derived from biased origins. When someone wants to defend something or to attack something, he often evaluates it. Evaluation is a motivated behaviour. Likewise the way in which results of an evaluation are accepted depends on whether they help or hinder the person receiving them. Evaluation is an integral part of the political processes of our society. (House, 1973, p.1)

House is referring to the USA, but this statement is as true for this country as for his. Evaluation has become an important political issue. Resources for the education system are limited. They must be allocated between competing demands and hence value judgements and political decisions must be taken. When an evaluation study contributes to such decisions, it is part of the political process.

MacDonald (1976) also sees evaluation as a political activity. He writes.

'Evaluators rarely see themselves as political figures, (persons involved in the distribution and exercise of power) yet their work can be regarded as inherently political, and its varying styles and methods as expressing differing attitudes to the power distribution in education' (MacDonald, in Tawney, 1976, p.125)

MacDonald illustrates this by describing a personal encounter. During a visit to the USA, he met a research worker who had recently completed an evaluation of the effects of a particular State school bussing programme. She was very gloomy about the outcomes of her evaluation study. It turned out that she had been commissioned by the State to review its bussing policy, but her study had been ignored when the review took place. Her study had strongly supported the current policy, yet the decision-makers had rejected that
policy. MacDonald says that this

'was a good piece of educational research but a bad
piece of evaluation. Bad for two reasons: first because it
paid insufficient attention to the context of the policy
decision it sought to serve and, secondly, because it
allowed the conditions of the contract to pre-empt the
right of those affected to be informed' (MacDonald in Tawney, 1976, p. 126)

Expanding on this, MacDonald gives a political
classification of evaluation studies: bureaucratic,
autocratic and democratic. He stresses that this is an 'ideal
typology'. Hence when one is considering real examples there
may not be a perfect fit with the types. Any one approach to
evaluation may have aspects of more than one type.

a) Bureaucratic evaluation

In this 'type', the evaluator accepts the values of those
who control the educational resources. Information is
provided to help them accomplish their policy objectives. The
bureaucratic evaluator's role is one of management consultant
who attempts to satisfy his client. At the end of the
evaluation it is the client who owns the report. According to
MacDonald, the key concepts in this style of evaluation are
'service', 'utility' and 'efficiency'.

b) Autocratic evaluation

The role of evaluator here is one of expert adviser. His
methodology must be of high quality and be seen to yield
'scientific and objective data'. The report is owned by the
evaluator and his position is an 'autocratic' one in the
sense that he is communicating this message 'Here is my
principled and objective advice and you really ought to take
The key concepts of the autocratic evaluator are 'principle' and 'objectivity'.

c) Democratic evaluation

This attempts to provide an information service to the whole community. The assumption behind this sort of evaluation is that there is no consensus about basic educational issues, except that the public has the right to be informed. Another important characteristic of this type is the offer of confidentiality to his informants who must have at least some control over the data. The key concepts are 'confidentiality', 'negotiation' and 'the right to know'.

The 'teacher as researcher' model

Stenhouse (1975) advocates another approach to evaluation, that of the teacher as a researcher. He found the distinction between curriculum developer and curriculum evaluator (a common distinction at the height of the Schools Council involvement in evaluating large scale projects) unhelpful. Stenhouse argues that effective curriculum development depends upon the capacity of teachers to take a research stance to their own teaching. By a research stance, he means the willingness of the teacher to examine his or her own practice, critically and systematically. Stenhouse sees two areas in which methodological problems might occur; firstly, the problem of objectivity and secondly, the problem of data collection. However, he believes the problem of objectivity is a false one. Any research into classrooms must
have the aim of improving teaching and enhancing learning. Thus, to have any influence, research must be applied by the teacher and this is so, however objective the research. Hence, argues Stenhouse, as it is the teacher who controls the classroom, there can be no escape from the teacher's subjective perception. So, according to Stenhouse, the concern is with the development of a sensitive and self-critical subjective perspective and less with objectivity. Such a development is a difficult process. The problem is one of increasing teacher awareness. He then explores how the teacher might collect data with which to increase his awareness and Stenhouse suggests that, just as a games player often uses a coach as a consultant observer, so a teacher could invite an observer into the classroom. It would be important to establish from the outset that the teacher is a co-worker in research with the observer, and not just the object of observation. Another possibility would be to have some form of recording equipment, although this can be expensive and give an incomplete record of what is happening. Also, data could be collected from pupils. Stenhouse refers to the work of Elliott and Adelman (1973) who used pupils' perspectives in their Ford Teaching Project.

Towards the proposed curriculum evaluation process

Although the author favours ethnographic approaches such as the illuminative and case study approaches (because of their emphasis on the context in which the evaluation takes place) and recognises that evaluation is a political enterprise, it
is Stenhouse's argument that is particularly attractive; especially Stenhouse's stress that effective curriculum development depends upon the capacity of teachers to take a research stance to their teaching; that is, a willingness to examine their own curriculum problems critically and systematically. For, as Becher, Eraut and Knight (1981) point out, curriculum evaluation is directed towards problem solving. It was in order to explore further this problem solving characteristic of curriculum evaluation that the author turned to the writings of Schwab and Reid, since they have written extensively about the nature of curriculum problems, and of deliberation as a method of solving them. Also, in an article in Adelman (1984), Stenhouse admitted that his own thinking is not dissimilar in perspective from that of Joseph Schwab. Chapter four, therefore, starts by considering the writings of Schwab and Reid.

Summary
This chapter has reviewed a selection of theoretical and methodological approaches to curriculum evaluation. As has been noted, there is no clear taxonomy of evaluation models, hence the approaches described sometimes exhibit similar characteristics. The review begins with the influential behavioural objectives approach, next considers the classical or experimental approach and then moves on to consider examples of what Stenhouse has called 'new wave evaluation'. The last approach considered is that of Stenhouse's 'teacher as researcher'.
As Becher, Eraut and Knight (1981) state, curriculum evaluation is directed towards solving curriculum problems. Schwab in the USA, and Reid in this country have written extensively about the nature of curriculum problems and of the deliberative approach to solving them.

In order to find answers to the problems of curriculum planning, implementation and evaluation, Reid and Schwab argue it is necessary to think about them, and that will entail identifying what sorts of problems they are, and the kinds of thinking that are appropriate.

Reid (1978) identifies several approaches to thinking about curriculum problems. The first he calls the 'rational managerial'. This concentrates on producing 'rational, scientific and logical' approaches to solving curriculum problems. From this tradition come behavioural objectives, psychometrics, educational technology, systems theory and mastery learning. Reid sees this tradition as basically concerned with the 'technical apparatus' of the curriculum - that is control, efficiency, performance and achievement of goals. But, Reid claims, questions of values, as to whose goals are being pursued with efficiency, are left to one side.

A second approach, he calls the 'radical critique'. Those writing from this perspective are very aware of the
hidden curriculum and the assumptions and ideologies that lie behind curricular objectives and systems. But Reid does not see the radical approach as contributing much to the solution of curricular problems in schools. He claims:

"they either remove themselves to a higher moral and intellectual plane from which they can safely criticise those who actually get involved in practical curriculum tasks, or declare that the only way of improving the curriculum is to work for social revolution".

(Reid, 1978, p. 10)

A third approach he identifies as the 'reactionary solution'. This is based on a belief that we should return to all that was good in the past. The Black Papers (1969) illustrates this sort of approach in this country and the 'Back To Basics' movement in the USA.

Reid (1978) rejects all three approaches. He sees the radical and reactionary as authoritarian, claiming to know the answer before the problem has been fully explored. He discounts the 'rational managerial' approach because of its neglect of values issues. In place of these he proposes a 'constructive response' to attempt to solve curricular problems.

Both Schwab (1970) and Reid (1978) deny that curriculum problems are procedural ones (problems which can be solved by applying a uniquely suitable formula or technique) but see them as 'uncertain practical problems'.

"A practical problem is a problem about what to do" (Gauthier, 1963, p. 1)

Practical problems may be contrasted with theoretical problems whose solution is to be found in knowing or
understanding, rather than in deciding what to do. Questions such as 'what should I teach and how should I teach it?' are practical and uncertain ones. They have to be answered in one way or another and nothing can tell us infallibly what the right answer is. Also we are never in a position to make a fresh start. Gauthier (1963) says that when confronted with a practical problem,

'we can't stop ourselves and our world and then start everything up again in a new way.'
(Gauthier, 1963, p. 1)

An existing context must always be taken into account. Each practical problem is in some way unique, belonging to a specific context. Likewise, the context of a curriculum problem is important and must be considered by all participants engaged in attempting to find solutions. Curriculum problems then, are practical and uncertain ones, each belonging to a specific context. The problem slowly emerges as data is sought, and that search is gradually given direction by the slow formulation of the problem. According to Schwab (1970), at some indeterminate point in the search, the problem assumes shape and the quest for data becomes more clearly directed. Gradually it becomes a search for a solution, rather than a problem. During this phase, alternative actions are thought about, their consequences considered, and their cost effectiveness and feasibility judged. The method of the practical (which Schwab calls 'deliberation') is not a linear affair proceeding step by step, but complex, fluid and transactional, aimed at
identifying the desirable. The method of the practical

`cannot be inductive because the target of the method is not a generalisation or an explanation but a decision about action in a concrete situation. It cannot be deductive because it deals with the concrete case and not abstractions from cases.'
(Schwab, 1970, p.318)

The concept of deliberation can be traced to Aristotle (see Reid and Walker, 1975 p.110). Aristotle saw deliberation as a process by which persons determine what they should do, when they have choice, yet no exact knowledge on which to base that choice. He contrasted deliberation with proof or demonstration, which he saw as the appropriate method in areas like mathematics and logic, where exact knowledge was thought possible. Deliberation, however, provides justification for actions in practical endeavours (for example, morals, politics, medicine) where he did not believe exact knowledge was possible. Reid (1978) argues that, as far as attempting to solve curriculum problems is concerned, `deliberation' is to be preferred to the use of the words `debate' or `discussion', because he sees discussion as

`imbued with a commitment to right answerism, a belief that problems can be solved in some final sense through the discovery of the right formula'.
(Reid, 1978 p.4.)

Whereas Reid (1978) defines deliberation in the following way.

`It is an intricate and skilled intellectual and social process whereby, individually and collectively, we identify the questions to which we must respond establish grounds for deciding on answers, then choose among available solutions.'
(Reid, 1978, p.43.)
This definition reflects that of Schwab (1970,p.318), who sees deliberation as being both complex and arduous and having to do with both means and ends, and their mutual determination of each other. The facts relevant to a particular issue must be ascertained, needs identified and possible solutions generated. The costs and consequences of those alternatives must be weighed against each other and a choice made between -

'not the RIGHT alternative, for there is no such thing, but the BEST one,'  

The importance attached to deliberation by Schwab is shown by this quote from the preface he wrote in a book by Reid and Walker (1975)

'It is through deliberation .... that we shape difficulties into problems we can recognise. It is through deliberation that we generate alternative solutions to our problems. It is through deliberation .... that we consider consequences of alternatives and test these consequences against our hopes and wishes.Finally it is by deliberation .... that we initiate and maintain action toward our chosen ends and means.  
(Schwab,in Reid and Walker,1975,p.vii)

For deliberation to be effective Schwab believes the consideration of the widest possible variety of alternatives to be necessary. He further claims that deliberation requires 'the penetration of the curtains'  
(Schwab,1970,p.319.) that separate interested parties in education. However Schwab stresses  
'The aim here is not a dissolving of specialisation and special responsibilities. Quite the contrary: if the variety of lights needed is to be obtained, the variety of specialised interests, competences, and habits of mind which characterise education must be cherished and nurtured. The aim, rather, is to bring the members of this
Schwab sees three operations involved in the deliberative process.

'discovery of one another by collaborators, coalescence of what is discovered, utilisation of the coalesced body of concerns as tools for generating new .... materials and purposes'.

(Schwab, 1970, p. 365.)

These operations take place simultaneously and not serially. The first two take place as the third is undertaken. He sees the process carried forward in a spiral fashion, so that the questions that must be responded to are identified, the grounds established for deciding on answers, and choices made from among the available solutions. These choices will not entirely satisfy any one party to the deliberation, but will satisfy the group more than any other set of choices.

These stages: the identification of questions, the establishment of the grounds for decision making and the choice from among the available solutions, are not dissimilar to the stages in decision making suggested by Vickers (1965).

1) Appreciation - how the problem is to be defined.
2) Reality judgement - what the relevant facts are.
3) Value judgement - what solutions would be acceptable.
4) Generation of alternatives - what might be done.

Schwab (1976, p. 366ff) also believes there are five areas of experience which must be represented in any group tackling a curriculum problem.
The five areas of experience are:

**Subject matter.**
There must be someone present with the knowledge and ways of thinking of the curriculum content under consideration.

**Learners.**
There must be someone present familiar with the learners involved and with some general knowledge of the type of learner under consideration.

**Milieus.**
There must be someone with the experience of the milieu in which the learning will take place. These will include the school, the classroom, the peer group, the family, the community, social and ethnic groupings, and so on.

**Teachers.**
There must be someone with experience of the teachers who will be involved in any new developments, what knowledge they possess and what their attitudes to new ideas may be.

**Curriculum making.**
There must be someone with the experience of the process of curriculum making. Schwab sees the representative of this area of experience as playing a chairperson's role. There is a special responsibility for the person(s) in this role to remind all participants of the importance of each other's experience. The need is more for a person skilled in managing groups, than for someone with factual knowledge of curriculum construction.

The size of the group should be such that sources of
expertise are well represented without creating a group so big, that it becomes formal. Informality is very important because -

"people are afraid to risk assertions or, on the other hand, to contest them".
(Reid, 1978, p. 52)

They may be more concerned with defending their own position than discovering the wants and aims of others. Discovery of other people's wants and desires can lead to a coalescence of aims, data and judgements. The knowledge and awareness can then be pursued creatively to recommend and bring about curriculum change. Both Hampshire (1959) and Gauthier (1963) emphasise the discovery element in deliberation.

"Only as we consider what we can and cannot do, can we determine what wants and desires, aims and ends, may be effected by our action. As a result of this enquiry we establish practical judgements".
(Hampshire, 1959, p. 105)

Schwab (1970, p. 380) believes that deliberation begins with the intertwining of two radically different strands - what he calls information and soul searching, that is, knowledge of the effects of the current curriculum and a vision of what it might be. He claims that it then progresses through two phases. In the first phase, the participants begin to discover themselves, their values and the educational consequences of these. Also, they begin to discover their colleagues' values and the educational implications of these values. This leads on to an exploration of what modifications must be made to accommodate other's perspectives and arrive at a consensus that can lead
to efficient functioning. Schwab believes that this last point justifies considerable time being spent in this phase of deliberation. He stresses, however, that merely getting together does not guarantee the discovery of self or others. Schwab believes that it is

'normal for men to treat their own values as if they were well examined: to ignore contrary or different values utilised by others, and, most of all, to elevate automatically the area of their own expertise to the role of ultimate arbiter of matters under consideration.'
(Schwab, 1970, p. 381)

Collegiality will only occur, according to Schwab (1970)

'to the extent that a minimal capacity for shame and a degree of humility characterise each member of the group.'
(Schwab, 1970, p. 381)

In other words, what is needed is a readiness to explore one's own value system and its implications as well as a willingness to explore and empathise with the perspectives of others.

Schwab divides the second phase of deliberation into two sub-phases. Firstly, the generation of alternatives and secondly the process of choosing and deciding between the various alternatives, recognising their implications. It is significant to note, however, that Schwab does not think that educating the educators to participate in deliberation will be quick and easy. He believes that they need training in how to take part in

'deliberative assemblies in which problems and alternative solutions will be argued by representatives of all, for the consideration of all and for the shaping of intelligent consensus'
(Schwab, 1970, p. 319)
Reid (1978, p. 59) claims that the essence of the deliberative approach is the recognition that values are central to decision making. He goes on to list the attitudes he believes are necessary if effective deliberation is to take place.

1) The belief that it is possible for decision makers to act other than as representatives of constituencies.
2) The confidence that time spent in exploratory and appreciative discussion is well invested.
3) The conviction that better data leads to better decisions.

According to Reid (1978, p. 50) the ability to deliberate effectively will be fostered by the collation and discussion of examples of good practice, insights into deliberation by gifted practitioners and the results of experimentation. He refers to the writings of Schwab and suggests that studies of curriculum project groups may provide insights. He then goes on to identify the particular study carried out by Walker on the Kettering Art Project. (Walker and Reid, 1975, p. 91ff).

Walker's curiosity had been aroused by his observation that curriculum planning groups in which he had participated had never operated on the procedural basis advocated by the exponents of the behavioural objectives approach to curriculum planning. To see how curricula should be planned, he tried to discover how they were planned. He began by making a case study of the planning, implementation and evaluation of an art project based at Stanford University and directed by Eisner. The more he studied the group, the more
he came to believe that curriculum deliberation is structured and task relevant. He analysed a sample of the discussions that took place and identified three tiers of interaction - deliberative episodes, deliberative moves, and a categorisation of the source and subject of the data used in the deliberative moves.

One of the main conclusions that Walker came to in using this three tier analysis was that the data base for most of the deliberation was rather slight. For example, more than half the arguments he analysed were based on past experience and conventional wisdom, rather than observation. He considered this a cause for concern. Also, he claims that most curriculum development procedures overlook the practical difficulties that people experience in stating what they want educationally.

Effective deliberation might be facilitated then, firstly, if a situation was created in which participants were enabled to express their opinions and come to some understanding of those of others. And secondly, the outcomes might be improved if the data base was as wide as possible and based, at least in part, on first hand observation of the matter under consideration.

Hegarty (1977, p.31) notes that although Schwab's (1970) paper The Practical: A Language for Curriculum was significant and persuasive, it did not attempt to suggest methods for conducting curriculum deliberation. She refers to Westbury's (1972) challenge of the suggestion that he
detects in Schwab's writing that deliberation is necessarily without guide or rule. Although he does not believe that one structure or method of deliberation will be effective in all situations, he claims that the exploration of a range of methods is now an important task for curriculum researchers. Hegarty refers to a few studies in the methods of curriculum deliberation – Fox (1972), Tamir and Jungwirth (1974), and Eisner (1975). She concludes by quoting Eisner (1975).

'When it comes to ideas that can be used to structure curriculum development groups in order to maximise ideational fluency, social compatibility, or morale, little is available in the written material published in the field of curriculum'.

(Eisner in Hegarty, 1975, p.36)

Hegarty (1975) is particularly interested in the problem identification phase of curriculum deliberation and the main purpose of her paper is to present the case for using a particular technique (NGT - nominal group technique) during the problem identification phase.

The author's particular interest was in the practical problem of curriculum evaluation. If, as has been argued in this chapter, the method of the practical is deliberation, then a deliberative approach to curriculum evaluation could prove to be a valuable one. The author had particularly noted Schwab's description of the three operations involved in the deliberative process.

'discovery of one another by collaborators coalescence of what is discovered, utilisation of the coalesced body of concerns as tools for generating new .... materials and purposes.'

(Schwab, 1970, p.365)

Schwab's warning was also noted that merely getting
together does not guarantee the discovery of self and others. The author was therefore concerned to find a theoretical framework and methodology relating to the discovering and exploring of meanings and values in oneself and others. A theory and accompanying methodology which recognises individual differences in perspectives and the problems of identifying and sharing these perspectives, is personal construct theory and repertory grid methodology. Personal construct theory derives from the philosophical position of constructive alternativism. Pervin (1970) states that

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"according to this position, there is no objective reality ... Instead, there are efforts to construe events - to make representations of phenomena in order to make sense out of them. There are always alternative constructions available from which to choose..."
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(Pervin, 1970, p.337)

Kelly (1955), the originator of personal construct theory, states that

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"each man contemplates in his own personal way, the stream of events upon which he finds himself so swiftly borne"
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(Kelly, 1955, p.3.)

Kelly's personal construct theory postulates that persons can represent their world, rather than merely respond to it, and that they can place alternative constructions on their experience. These constructs are subject to revision or replacement in the light of further experience. Persons rely on their own personal constructs to plan, regulate and explain their own actions. Information about the content and structure of another person's construct system is likely to provide a useful set of cues for anyone wishing to communicate with them. But, it is not always easy to
comprehend another's construct system or even to understand one's own. Kelly's original repertory test was devised by him as a method for establishing the basic concepts which a person uses and the inter-relationships between them. In the next chapter, personal construct theory and the repertory grid methodology that derives from it, will be examined.

In seeking assistance from personal construct theory in the design of a curriculum evaluation process, the author turned to Kelly's theory, with the following attitude, as expressed by Reid, in mind.

Reid (1978) writes, in connection with a search for a theoretical framework.

'A theory that would guide us to the solution of all curriculum problems, at all times, and in all places is an impossibility.' But, 'if we are concerned with task oriented research, we do not need to look for the best possible theory, only a theory that is adequate for the accomplishment of certain specific ends. Nor do we need a theory that is completely and consistently developed in all its parts, only one that can serve the practical purpose of directing us to helpful task oriented research strategies.' (Reid,1978,p.28)

Summary

In this chapter it has been argued that curriculum problems, including those of curriculum evaluation, are practical and uncertain ones, and that an appropriate method for tackling these problems is deliberation. Some of the characteristics of deliberation have been explored, with special reference to the writings of Schwab, Reid and Walker. Deliberation is not an easy process and the need to explore a range of methods for facilitating it, has been stressed by Westbury (1972).
Personal construct theory is suggested as a means of assisting the deliberative process.
CHAPTER FIVE

AN INTRODUCTION TO PERSONAL CONSTRUCT THEORY AND REPERTORY GRID METHODOLOGY

In this, and the following chapter, personal construct theory and repertory grid methodology are examined as a possible basis for a deliberative approach to curriculum evaluation; that is, a curriculum evaluation process which would facilitate the exploring of one's own meanings and values and the meanings and values of others.

In this chapter, Kelly's theory and his original role construct repertory grid will be outlined. Then, various features of repertory grid methodology will be explored. Finally, some of the criticisms that have been levelled against personal construct theory and repertory grid methodology will be considered.

An outline of personal construct theory

Kelly (1955) originally faced the problem of facilitating the discovery and exploration of personal meaning in his work as psychotherapist. He had become interested in the personal development of meaning and produced an instrument for assisting people to make these meanings explicit. His approach has been widely used in psychotherapy (Bannister and Mair, 1968; Bannister, 1970; Bannister, 1977). It also has been used in other areas where it is important to develop understanding between participants. Pope and Keen (1981) consider its use in
education.

Kelly's approach has been called 'constructive alternativism'. That is, as far as our understanding of the world is concerned, instead of objective reality, there are individual efforts to construe experience and to make sense of it. Kelly's ideas are not always easy to follow. He warns his readers (Kelly, 1955) that the familiar concepts in psychology are not present. In his writings, there is no 'ego', 'emotion', 'maturation', 'reinforcement', 'drive', 'unconscious' and no 'need'.

Kelly's view of Man is that of 'Man the scientist' (Kelly, 1955). Scientists attempt to predict and control phenomena. We, observes Kelly, operate like scientists in that we try to predict and control our worlds. We experience events, perceive similarities and differences among these events, formulate constructs to order our experiences and, on the basis of these constructs, seek to anticipate events. We are similar in that we all formulate constructs and follow similar psychological processes in the use of these constructs. However, we are unique in the use of our own particular sets of constructs. According to Kelly (1955), we have the capacity to 'represent' our environment, rather than just 'respond' to it. A person's personal construct system provides him with both the freedom of decision and the limitation of action. That is persons are both free and determined. Free, because their personal constructs permit them to interpret their experiences rather than being pushed
around helplessly by them. Determined, because they can never make choices outside the world of alternatives they have created for themselves. Ryle (1975) illustrates this point with the title of his book on personal construct theory, Frames and Cages. Persons are free to construe their experience but then are bound by their constructs. However, it is important to stress that constructs are continually subject to modification in the light of new experiences.

Kelly presented his theory in terms of one fundamental postulate and twelve corollaries.

Fundamental postulate and its corollaries
a. Fundamental Postulate. A person's processes are psychologically channelized by the ways in which he anticipates events.
b. Construction Corollary. A person anticipates events by construing their replications.
c. Individuality Corollary. Persons differ from each other in their constructions of events.
d. Organization Corollary. Each person characteristically evolves, for his convenience in anticipating events, a construction system embracing ordinal relationships between constructs.
e. Dichotomy Corollary. A person's construction system is composed of a finite number of dichotomous constructs.
f. Choice Corollary. A person chooses for himself that alternative in a dichotomized construct through which he anticipates the greater possibility for extension and
definition of his system.

g. Range Corollary. A construct is convenient for the anticipation of a finite range of events only.

h. Experience Corollary. A person's construction system varies as he successively construes the replications of events.

i. Modulation Corollary. The variation in a person's construction system is limited by the permeability of the constructs within whose ranges of convenience the variants lie.

j. Fragmentation Corollary. A person may successively employ a variety of construction subsystems which are inferentially incompatible with each other.

k. Commonality Corollary. To the extent that one person employs a construction of experience which is similar to that employed by another, his psychological processes are similar to those of the other person.

l. Sociality Corollary. To the extent that one person construes the construction processes of another, he may play a role in a social process involving the other person.

An important part of his theory is that it is the perception of similarities and differences that leads to the formulation of constructs. He stresses the importance of recognising that constructs are composed of similarity/difference comparisons. For example, 'strength' would have no meaning without 'weakness'. Persons must, however, perceive similarity in a world in which no two experiences are exactly alike. That is,
experiences will never be identical but some will be construed as having sufficient similarity in order to impose some order and regularity on that person's world. The constructs in the unique repertoire built up by each person are inter-related and organised into a system so that they can form a basis for the interpretation of experience.

Kelly (1955) considers that to understand someone you must know something about the constructs used by that person and the way he has organised them. It was in an attempt to facilitate this process for his clients that Kelly developed his role construct repertory test. It is essentially a way of enabling people to explore their personal meaning 'systems' and has subsequently been developed into various forms (Fransella and Bannister, 1977) Initially it was used by Kelly to explore with his clients the ways in which they perceived those people who were important to them. Kelly presented his clients with 15 role titles (for example, self, mother, spouse, employer,) and asked them to write on 15 cards, the names of the corresponding people in their lives. These cards were then presented in groups of threes. Clients were asked to indicate in what important way, two of the people in a triad were alike, yet different from the third person. This is called the triadic method of eliciting constructs. The word or phrase used to describe how two of the people on the cards were alike was called the emergent pole of the construct. The word or phrase used to describe the way the third person was different from the other two was called the contrasting or implicit pole. Sometimes the implicit pole can only be
defined by the negative of the emergent pole, such as ....

'is supportive ..... is not supportive'.

Kelly claimed that no more than 15 to 25 triads are necessary to provide a sufficient sample of the person's main constructs. Further comparison yields little more information.

Not only do people differ in terms of their individual constructs, they also differ in the ways those constructs are organised. A central argument of personal construct theory is that constructs are hierarchically structured. A construct may be super-ordinate or sub-ordinate to another construct. One way of helping someone explore the organisation of their constructs is to ask them to complete a form of the repertory grid known as laddering. (Details of this are found in Fransella and Bannister, 1977, p.16)

Kelly provides an example of a completed role construct repertory test. It can be found in Kelly (1955,p.270) and is reproduced on the next page.
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 |
| Self | Mother | Father | Brother | Sister | Spouse | Ex-flame | Pal | Ex-pal | Rejecting Person | Pitted Person | Threatening Person | Attractive Person | Accepted Teacher | Rejected Teacher | Boss | Successful Person | Happy Person | Ethical Person |

**Constructs**

<table>
<thead>
<tr>
<th>IMPACT POLE</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
<th>15</th>
</tr>
</thead>
<tbody>
<tr>
<td>Don't identify in God</td>
<td>Don't identify in Christ</td>
<td>Completely different education</td>
<td>A lot</td>
<td>Bored</td>
<td>Parents</td>
<td>Not almost</td>
<td>Complete different education</td>
<td>Very religious</td>
<td>Completely different education</td>
<td>Not religious</td>
<td>Complete different education</td>
<td>A lot</td>
<td>Bored</td>
<td>Parents</td>
<td>Not almost</td>
</tr>
</tbody>
</table>

**EMERGENT POLE**

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 |
| Don't identify in God | Don't identify in Christ | Completely different education | A lot | Bored | Parents | Not almost | Complete different education | Very religious | Completely different education | Not religious | Complete different education | A lot | Bored | Parents | Not almost |
Analysing repertory grids

Kelly suggested that grids should first be examined, before they have been statistically analysed, in order to see something of what the person is telling us directly. But it must be remembered that when we look at a grid we look through our own system of constructs. If the decision is taken to statistically analyse the grid, then there are a range of possible analyses. Kelly himself describes a method of non-parametric factor analysis for extracting the major dimensions a person uses to order his social world. Many different forms have developed from Kelly’s original repertory test (as described in Hall, 1978; Fransella and Bannister, 1977). The use of the word ‘test’ in ‘repertory test’ can be misleading as the grid is a method, rather than a test (Fransella and Bannister, 1977, p.3.) The purpose of the grid is to inform us about the way in which our construct system is evolving and its limitations and possibilities. The results of the grid have often been looked on as a map of the construct system of an individual.

Perhaps the best way of looking at the grid is as a form of structured interview. It might be said that we go about exploring other peoples’ construct systems by engaging in conversation with them. As we talk to each other, we come, to some extent, to understand the way the other person views his or her world. The grid formalises this process and allows us to focus on what may be individual and surprising about the other person’s view of their world.

Since Kelly’s original research, different forms of the
repertory grid have been used to research a wide range of areas in which the discovery of individual meaning and the exchange or coalescence of meaning is an essential part. (Fransella and Bannister, 1977; Pope and Keen, 1981; Adams-Webber, 1979; Ryle, 1975).

**Repertory grid methodology**

In order to understand some of these developments it is necessary to explore some of the features of repertory grids in greater depth.

**Selection of elements and constructs.**

There is no clear distinction between elements and constructs. As Fransella and Bannister (1977) state:

> there is no such thing as an element that is only an element; or a construct that is nothing but a construct'.

(Fransella and Bannister, 1977, p.11.)

They give the following example:

father - not father

can be used as a dimension along which people can be placed. But father can also act as an element construed in terms of another dimension such as

strong in character - weak in character.

Elements are perhaps best thought of as the subject matter to which the constructs are applied (Hall, 1978, p.13); that is, elements are chosen to represent the area in which the subject's perspectives are to be investigated. For example,
if the focus is on interpersonal relationships, the elements may well be people. Their choice is, therefore, basically determined by the reason for the investigation.

**Elements**

Fransella and Bannister (1977) suggest that two important factors must be kept in mind when selecting the elements.

1. The elements must be within the range of convenience of the constructs to be used; that is, the person must be able to meaningfully apply all the constructs to all the elements being used. Constructs apply only to a limited number of people, events or things. Hence, when constructing a grid, it is important to remember to include only those constructs which are applicable to all the elements. And, as construct systems are personal, it is the subject who must assess the appropriateness of the constructs rather than the investigator relying on his or her own judgement.

2. The elements must be representative of the area of experience from which they are drawn. As Kelly (1955) says, "If the test is to indicate how the subject develops his role in the light of his understanding of other people, it is necessary that the other people appearing in the test be sufficiently representative of all people with whom the subject must relate his self construed role". (Kelly, 1955, p230.)

A subject, therefore, investigating his or her construing of some area of the curriculum, must include as elements those aspects which represent his or her experience of that area.
Constructs Constructs are composed of similarity/difference comparisons and each person, according to personal construct theory, builds up a unique repertoire of constructs with which to interpret their experience. Kelly (1955) laid down six principles with regard to constructs.

1. Constructs should be permeable; that is when constructs are elicited by the triadic method, they should be applicable to more than the 3 elements used in the elicitation.

2. The aim should be to elicit pre-existing constructs, rather than to develop new ones.

3. The verbal labels given to the constructs should be communicable. The investigator may find it necessary to test his or her understanding of the subject's construct by conversing with him or her.

4. Constructs should be explicitly bipolar; for by stating what something or someone is, one is also stating what he or she is not.

`Provided' or `elicited' elements and constructs

In the early use of grids as a clinical technique, the personal elicitation of both elements and constructs was the method adopted. Also, it might be argued that personal construct theory, the theoretical base for the repertory grid methodology, emphasises individuality and hence, elements and constructs must always be personal. This, however, denies the existence of the `Commonality Corollary' which states

`to the extent that a person employs a construction of experience which is similar to that employed by another, his processes are psychologically
similar to those of the other person.

That is, two people will construe some events similarly and hence share certain constructs. That is not to say that they use these constructs in identical ways but that there is enough overlap of meaning for communication to take place. In practice, whether or not the investigator provides or elicits the elements and/or the constructs will depend on the purpose for which the repertory grid is being used and the form in which it is applied. There are several examples in the research literature (Duckworth and Enwistle, 1973) where a common set of elements are selected and provided for each individual. This is then followed by either the provision or elicitation of constructs or a combination of both. Various research has been carried out into the value of 'elicited versus provided' constructs. Adams-Webber (1970) comments in his review of this research

'Although normal subjects prefer to use their own elicited constructs to describe themselves and others, both kinds of dimensions seem to be functionally similar when grid technique is employed to assess structural features of their cognitive systems'.

(Adams-Webber, 1970, p. 53.)

Fransella (1981) and Hall (1978) suggest that a useful approach with provided constructs is to first elicit constructs from the population concerned and then to provide those constructs which are used by most of the group. It is important to remember that whatever meanings words have, they have been ascribed to them by people. The meanings ascribed by the subjects to the investigator's labels of construct poles may not match the meanings assumed by the investigator.
If a decision has been made to provide elements and/or constructs, then discussion must take place to ensure a level of shared meaning and the labels changed, if necessary, to facilitate this process.

**Numbers of elements and constructs.**

Too few elements can fail to give enough information for a meaningful deliberation and can seriously influence the validity of any statistical procedure used. Too many elements produce a tedious exercise and may produce resistance in those involved. Pope and Keen (1981) claim that between 8 and 15 elements provide a useful basis for the production of a grid. It is of prime importance that the constructs used reflect the range of constructs which the subject feels are important to the area under consideration. Pope and Keen (1981) recommend that construct elicitation should continue until the individual indicates that his repertoire of constructs for that particular range of events is exhausted.

Hall (1978) makes the following point.

'It is surprising that even very intelligent people with a high level of verbal skill often begin to dry up after ten constructs and rarely go beyond twenty-five.' (Hall,1978,p.8.)

Slater (1977), in an analysis of just over 1,000 grids from miscellaneous sources, found the modal number of constructs to be 15. One other factor to take into consideration with regard to numbers of elements and constructs is the form of analysis which will be carried out on the grid(s). There may be some upper and lower limit on the number of elements and constructs which can be used and,
as has already been mentioned, very small numbers can seriously influence the validity of the statistical procedure used.

Methods of construct elicitation

1. The triadic technique

The method originally used by Kelly has been called the triadic or minimum context technique. The elements are usually written on separate cards. The subject is then presented with three of the element cards and asked to specify "some important way in which two of them are alike and thereby different from the third". Invariably the subject will produce a word or phrase to describe how two of the elements are alike. This is called the emergent pole of the construct. The subject may have to be asked again to provide the contrasting or implicit pole. Sometimes two contrasting words or phrases are produced such as "warm.....cold". But sometimes the implicit pole can only be defined by the absence of the emergent pole such as "religious.....not religious". When the words used to describe the construct poles are regarded as satisfactory by the subject, he or she is presented with three more element cards and the procedure repeated. This continues until no new constructs are elicited.

2. The Dyadic technique

Although the triadic method has been widely used, it has been found to be too complex a task for some subject groups,
such as young children and less able adults. Comparing two elements at a time has been found to be an easier task for such groups (see Ryle and Lunghi, 1970, in Fransella and Bannister, 1977).

3. Informal and conversational approaches

It would seem from the literature that informal or conversational methods can be just as effective at eliciting constructs as the traditional triadic technique. For example, Nash (1976) asked a group of 12-13 year olds to discuss their views of teachers (who they had previously divided into two groups - 'teachers they got on with' and 'teachers they did not get on with'). He then extracted six constructs from the discussion which were common to most pupils.

Pope and Keen (1981, p. 53) stress the importance of flexibility in the approach to elicitation. Grid methodology is best seen as a flexible technique rather than constrained by a formal and detailed procedure. The informal or conversational approach has the advantage of appearing a more natural form of communication to the subject(s). Hence there is less likely to be the sort of resistance that is sometimes found with the triadic approach; the author experienced this sort of resistance in his first investigation.

4. Interactive computer programs

An alternative to conversational elicitation of elements and constructs has developed out of the increased availability of small computers. PEGASUS (Program Eliciting
Grid And Sorts Using Similarities), perhaps the first of these interactive programs for grid elicitation, was developed by Shaw and Thomas at the Centre for Human Learning, Brunel University. The PEGASUS program not only elicits the grid but can go on to analyse the data produced. The subject sits alone with the computer and responds to prompts from a visual display unit or line printer. There is a continuous feedback of the element and construct sample and frequent checking, so that the subject is sure about previous ratings he or she has made. Pope and Keen (1981) claim that they found the feedback with PEGASUS was 'less than truly conversational and that the process felt rather unnatural'. (Pope and Keen, 1981, p.59)

They were concerned that terms such as construct and element were used early in the elicitation with subjects unfamiliar with grid language. They have produced what they believe to be a more natural interactive program which does not use technical terms early on and is more user friendly. The program is called DYAD, since it is based on a dyadic elicitation process. (Pope and Keen, 1981, p.60ff).

Scaling

Kelly's original method used the dichotomous form of the grid. People are asked to place each element on one or other of the two poles of the construct; this is usually indicated by putting a tick or a cross under each element.
Mother  Father  Sister  Brother  Friend
helpful  ✓  x  x  ✓  ✓  unhelpful
happy  ✓  x  x  x  ✓  miserable

In recent years, alternatives to the dichotomous form of the grid have been developed to allow subjects to make finer discriminations. The two most popular forms of the grid that have evolved are the 'ranking' and the 'rating' forms. In both forms, each construct is used as a scale along which the individual elements are placed.

**A ranking grid.**

The usual procedure in a ranking grid is for the elements to be numbered or arranged in order of their perceived distance from the emergent pole of the construct; for example, with 10 elements, the element most like the emergent pole would be ranked 10. A certain amount of resistance to the ranking method has been found, especially when there are a large number of elements to rank.

**A rating grid**

The rating grid has the advantage of allowing the subject to place any number of elements in the various positions along a linear scale ranging from the emergent pole to the implicit pole. 5 or 7 point scales are those most commonly used, as subjects have difficulty in discriminating between the points on larger scales. Hall (1978, p.18.) suggests that there may be an advantage in having no middle
rating in a scale, so that the person using it is encouraged to commit himself or herself. If a mid point on the scale is provided, its use is ambiguous; it may be used as the mid point on the continuum or as a way of expressing that that construct does not apply to that element.

Comparisons have been made with the rating form of the grid and Osgood's semantic differential. A major difference between these two techniques is that the adjectives used in the semantic differential are fixed, whereas the dimensions used on a grid are usually elicited from the individual or group. Bannister and Mair (1968) discuss the differences between Osgood's semantic differential and repertory grid technique in some detail.

A common way of administering the rating form of the grid is to have separate pages on which the construct scales are printed. The name of a different element is written at the top of each page and then the elements are rated according to the construct scales. An example follows.

Element number one... Mother

Kind: X - - - unkind
intelligent: - - - X - dull

[Scoring: 1 2 3 4 5]

The most popular method of scoring used with rating grids is to assign a value on a grading scale; for example, if a 1-5 scale is used, as above, to evaluate 'mother' on the kind/unkind construct; she would be assigned a '1' if she was
seen as very kind, a `2` if kind, a `3` if neither kind nor unkind, a `4` if unkind, and a `5` if very unkind. When all constructs have rated for each element, the resulting scores can be collated on to a grid matrix. An example of very simple grid matrix follows, with four more elements - father, sister, brother, friend.

<table>
<thead>
<tr>
<th>Elements:</th>
<th>Mother</th>
<th>Father</th>
<th>Sister</th>
<th>Brother</th>
<th>Friend</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kind/unkind</td>
<td>1</td>
<td>4</td>
<td>2</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>Intelligent/dull</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>4</td>
<td>1</td>
</tr>
</tbody>
</table>

A more usual grid matrix would, of course, be larger than this, with 10-15 bipolar constructs, with the corresponding 10-15 rows of scores.

Other forms of the repertory grid

Other forms of the grid have been developed, such as Hinkle's Imp Grid (1965,in Bannister and Mair,1968) and the Resistance to Change grid (Fransella and Bannister,1977,p.43). They are not discussed here as they were not seen as relevant to this thesis.

Methods of Analysis

Once the elements have been ranked, rated or, in the dichotomous form ascribed to one or other pole of the constructs, and the grid matrices compiled, various types of grid analysis are possible, with varying degrees of complexity. The type of analysis carried out will depend on the purpose of the investigation and on the availability of both computers and computer programs. But Fransella and
Bannister (1977) warn that, as programs for analysing grids increase and become more available, it is easy to forget that much can be done with a grid matrix's raw data. Fransella and Bannister (1977) describe a variety of simple methods. Pope and Keen (1981, p. 65ff) also give detailed accounts of three, simple, visual techniques.

2. Arithmetic sum of difference matrix.
3. Use of acetate sheets.

However, it was Kelly himself (1955) who outlined a non-parametric method of factor analysis. Then Slater, in 1964, under the sponsorship of the Medical Research Council, began by producing a complex method for analysing grids into their principal components.

Until the microprocessor became readily available, simple techniques had to be used if immediate feedback was required. However, the current availability of computer programs which analyse grid matrix data and provide printouts, makes statistical analysis more attractive to the researcher.

The statistical analyses come in two main groups; clustering techniques and those based on some form of factor analysis, such as principle component analysis.

**Clustering techniques**

Everitt (1974) states that clustering techniques attempt to solve the following problem.

> Given a sample of N objects or individuals, each of which is measured on each of p variables, devise a classification scheme for grouping the objects into g classes. The number of classes and the characteristics
of the classes to be determined'.
(Everitt, 1974, p. 1)

Everitt (1974) observes that these techniques have been variously named but that the most commonly used term for techniques which seek to separate data into constituent groups is 'cluster analysis'.

When this approach is applied to an analysis of a repertory grid matrix, particular forms of cluster analysis can sort the columns and rows so that the most similar columns and rows are grouped together. That is, the analysis extracts groups or clusters of similar items and exposes a patterning of the original data. With small grid matrices, sorting can be done by hand, but a computer program is needed to handle larger grids. It is important to remember that the mathematical clusters produced may not be psychologically meaningful and therefore the psychological validity of the mathematical relationships uncovered must be discussed with the subjects.

Recent programs (PEGASUS, FOCUS, CORE) developed at the Centre for the study of Human Learning, Brunel University, are based on modifications of McQuitty's (1966) Cluster analysis. The FOCUS package produces a printout of

a) The original raw grid.
b) A matching score matrix of the relationship between all pairs of elements.
c) A matching score matrix of the relationship between all pairs of constructs (with ratings reversed as well as originally rated)
d) A statement as to which constructs (if any) should be reversed.
e) A re-ordered grid with tree diagrams attached which show the patterns of relationships in the data. (Pope and Keen, 1981, p. 72)

The form in which the re-ordered grid and tree diagrams are displayed is illustrated by the following diagram.

(From Pope and Keen, 1981, p. 73.)

Pope and Keen (1981) claim that subjects have very little difficulty with this sort of printout and that conversation between subject and investigator about the feedback can often lead to more relevant information about the subject's thoughts and feelings. They suggest that during feedback subjects should be encouraged to
a) note high relationships between pairs or groups of elements.

b) consider personal reasons why pairs or groups within the total set may be alike or dissimilar.

c) consider the clusters formed in order to ascertain possible superordinate constructs.

(Pope and Keen, 1981, p. 72)

It is important to stress that as one 'ascends' the tree diagram the strength of relationship between the elements or constructs decreases.

Programs such as FOCUS have been designed for use by subjects inexperienced in computer usage and aim to produce feedback with the minimum of complex mathematical computer output.

**Factor analysis**

Another form of multidimensional analysis is factor analysis. It is another commonly used form of grouping data and has been defined by Kerlinger (in Cohen and Manion, 1980) as a method for

'\textit{determining the number and nature of the underlying variables among a large number of measures}'

(Kerlinger, in Cohen and Manion, 1980, p. 283)

Principle component analysis is a form of factor analysis which has been used to analyse grids. For example, Slater's INGRID is a principle component analysis package. INGRID was used by the author of this thesis in his first investigation into the use of repertory grid technique. It is reported in the next chapter. A principle component analysis gives

'\textit{a detailed account of the relationships present in the grid. The correlations between the constructs, the distances between the elements, the loadings of both the constructs and elements on each of the components, and the}'}
inter-relationships between constructs and elements are all given. In addition, a breakdown of the total variation present in the grid into that accounted for by each of the constructs and similarly for each of the elements is given. (from, Grid Analysis Package, Manchester University Regional Computer Centre, 1981)

Slater went on to develop methods for comparing grids, both with the same elements or the same constructs. Keen and Bell (in Pope and Keen, 1981) developed the GRIDDLE program as an alternative to INGRID and which would run on a 56K core microprocessor.

It is important not to assume that mathematical relationships necessarily imply psychological ones. The principle components identified, with their construct listings, must be carefully considered by the subject to determine whether they have any psychological validity for the person.

Reliability and validity

Slater (1977) claims that grid data cannot be subjected to orthodox methods of investigating reliability and validity. He argues that the theory from which psychometric methods for measuring reliability and significance are derived, assumes that samples can be drawn at random from an objectively defined population. The assumption may be satisfied by the nomothetic data provided by tables of test scores, but not by the idiographic data of a grid. However, he goes on to argue that, with a grid, there is not the same need for an assessment of reliability and significance.

'The grid does not serve the same purposes as a battery of tests. It's primary interest is in what it shows directly - the informants state of mind at the time of
the interview. It's productive value for estimating what is to be expected in another case or on another occasion may not need to be considered...... Thus the inference of significance and reliability proposed by statistical theory are inappropriate as well as inapplicable'.
(Slater,1977,p.127)

It makes very little sense to talk of the reliability of the grid, since there is no such thing as the grid, only the particular grid being used with a particular person(s) at a particular time. In some cases, the purpose of a particular grid may hinge on finding low reliability. Fransella (1981) suggests that instead of expecting similar grids from the same subject on different occasions, it might be better to try to predict where change in a particular person's grid is likely to occur. But, as Bannister and Mair (1968) state

"if the reliability of a particular grid in a particular context needs to be known....... then it will have to be specifically assessed as part of the experimental venture'.
(Bannister and Mair,1968,p.165)

When a grid is specifically designed as a nomothetic test (as in Bannister and Fransella's Test of Thought Disorder,1977) the reliability of the test can be assessed in the traditional way. However, the Grid Analysis Package (Manchester University Regional Computer Centre, 1981) states that perhaps the only well publicised example of a grid developed into a standardised test is the Bannister-Fransella Test of Thought Disorder.

Validity

Validity is the extent to which an instrument measures what it is intended to measure. As with reliability, it is impossible to ask what is the validity of the grid. Bannister
and Mair (1968) suggest that, because the repertory grid is a method, rather than a test, perhaps all that can be done is to consider whether the basic rationale of grids makes sense; whether their application gives results which support the underlying assumptions and whether the use of grid methods justifies their continued use. Personal construct theory is based on the notion that people construe their world in an organised way, using related categories. Bannister and Mair (1968) argue that if that is so, then the absence of significant grid structures would be predicted in a group such as thought disordered schizophrenics. Bannister and Mair (1968) quote a number of studies that confirm this prediction. This, they argue, is evidence of the validity of this particular grid. They also review a range of investigations demonstrating that various predictions based on personal construct theory are supported by the results of studies using repertory grids. They are confident that the repertory grid methodology is a valid way of eliciting personal meanings and uncovering the structures between them.

A critique of personal construct theory and repertory grid methodology

Despite a growing interest in personal construct theory and an increasing use of repertory grid methodology, they have not been without their criticisms.

Beard (1982) suggests that Kelly's personal construct theory is an anomaly in psychology, especially with regard to two unusual features. Firstly, Kelly has a highly individualised
polemical literary style which Bruner (1956,p.335) calls 'infuriatingly prolix'. Kelly's ideas are not always easy to follow and he warns his readers himself that the familiar concepts in psychology are not present.

```
... the term learning, ... scarcely appears at all. There is no ego, no emotion, no motivation, no reinforcement, no drive, no unconscious, no need. There are some brand-new psychological definitions, words like foci of convenience, preemption, propositionality, fixed role theory, creativity cycle, transitive diagnosis, and the credulous approach ... Unfortunately, all this will make for periods of strange and perhaps uncomfortable, reading. Yet, inevitably, a different approach calls for a different lexicon; and, under its influences many old terms are unhitched from their familiar meanings'. (Kelly,1955,p.x-xi)
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And secondly, Beard (1982) notes that although Kelly's writings can be located within a phenomenological and humanistic framework he makes little attempt to set his ideas within a historical and contemporary context, although he does acknowledge the influence of Dewey.

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'Dewey emphasised the anticipatory nature of behaviour and the person's use of hypothesis in thinking. The psychology of personal constructs follows Dewey in this respect' (Kelly,1955,p.129)
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Beard (1982) identifies the following main criticisms of personal construct theory and methodology.

A. The range of convenience of personal construct theory.

B. Individuality and sociality.

C. Uncertainties involved in the actual use of repertory grids.
A. The range of convenience of person construct theory.

In an early review of Kelly's work, Bruner (1956) called personal construct theory

'the single greatest contribution of the decade....to the theory of personality functioning'.
(Bruner, 1956, p. 355)

However, he added, that there were some areas of psychology that appeared to be more within the range of convenience of the psychology of personal constructs than others. Bruner felt that the theory emphasised the cognitive control of experience, whilst saying little about individual growth and development and less about human feelings and emotions. He comments that Man may not be the pig that reinforcement theory makes him, but he wonders if Man is only the professor that Kelly suggests.

Such arguments are countered in personal construct theory by stating that Kelly tried to account for the whole of human behaviour within the general framework of his own cognitive theory of personality. Kelly (1969) warned his readers that in his theory familiar concepts in psychology were missing. He was also explicitly against dividing up man's experience, as he saw this creating barriers to sensitive psychological enquiry. Peck and Whitlow (1975, p. 54) conclude their evaluation of Kelly by acknowledging the importance of recognising the cognitive aspects of personality but suggesting that this perspective may have a narrower range of convenience than proposed by personal construct theory. Hence, personal construct theory may been seen as offering a valuable perspective, if not a total explanation of human
behaviour.

B. Individuality and Sociality

Beard's (1982) second criticism of personal construct theory relates to the emphasis on the individual nature of personal constructs to the exclusion of a consideration of shared meaning. Stringer and Bannister (1979) note the influence on personal construct theory of its clinical origins. They write

'A good deal of clinical psychology, whether in its more medical or humanistic guises, is undoubtedly open to the charge of individualism. The charge has stuck on to personal construct psychology: and has been used to deny its relevance as a way of examining social psychological phenomena. It has been aggravated by misconceptions about the meaning of 'personal' and the peculiar contribution of repertory grid technique. Both have been interpreted in terms of a phenomenological stance, the justification of which is thought to lie in its attention to what is unique to the individual.' (Stringer and Bannister, 1979, p.xiv)

They go on to argue that despite the extensive clinical use of repertory grid methodology, construct elicitation is not intended simply as a means of access to the private world of the individual. Construct elicitation is a form of communication only made possible by its basis in a shared social reality. Fransella and Bannister (1977, p.117) relate this argument to the debate concerning elicited or provided constructs. They stress that all constructs, however arrived at, are personal, because to become part of person's system they must be acquired and integrated by him. Although the clinical origin of much of the work with grids has led to the stress on individual constructs and elements, there would be considerable interest in using element and constructs
which come from areas where there is a high level of public agreement. They also write

'There is a tendency to view personal construct psychology, if dealing with relations at all, as relevant only to dyadic interactions....Although group processes have rarely been examined through personal constructs, there is in principle no reason why they should not'. (Fransella and Bannister, 1977, p. 117)

This is particularly significant to this thesis as curricular issues in educational institutions are issues of common concern and a deliberative approach to evaluation invites the discovery and exploration of as many perspectives as possible.

Duck (in Stringer and Bannister, 1979, p. 279) is also concerned that social interaction has received rather narrow attention in Kelly's thinking. To deal with other people a person needs not only to construe them adequately, but also to share certain constructs with them, so that communication and social interaction become possible. Kelly's sociality corollary states

'To the extent that one person construes the construction processes of another person, he may play a role in social processes involving that other person'. (Kelly, 1955, p. 95)

Duck (in Stringer and Bannister 1979) suggests that associating the sociality and commonality corollaries could be valuable.

The commonality corollary states: -

'To the extent that one person employs a construction of experience which is similar to that employed by another, his processes are psychologically similar to those of the other person'. (Kelly, 1955, p. 90)

Taking the commonality and sociality corollaries together,
Duck argues that people with similar constructs will find each other easier to understand and to interact successfully, in social situations. He sees communication between persons nurtured not only by the sharing of ideas and language, but by sharing constructs. Duck stresses that constructs are the cognitive building blocks of which attitudes, ideas and language are made, and to share a person's constructs is to share what lies behind their attitudes, ideas and language. Communication starts where construct systems overlap and develops as what is learnt in the interaction stimulates the participants to extend their construct systems.

Thomas (in Stringer and Bannister, 1979) suggests an extension of personal construct theory with two 'social' corollaries. The Social awareness corollary -

'The forms in which a person construes his or her constructions of social interaction processes will condition their ability to consciously influence their processes of interaction with others' (Thomas, in Stringer and Bannister, 1979, p. 62)

and the complementarity corollary

'when people share in a common pool of events including each other, but by virtue of their position sample these events differently, their constructions of experience will develop to complement each other. This complementation will produce a social system which exhibits greater complexity of stable organisation than exists in the constructions of any individual contributing to it.' (Thomas, in Stringer and Bannister, 1979, p. 66)

From these two corollaries, Thomas develops what he calls a conversational methodology, which is relevant to this thesis and is discussed in the next chapter.

Hall (1978), when outlining repertory grid methodology, notes that many grids reported in the literature have been
generated from single persons. He stresses, however, that it is possible to use groups of grids to examine similarities and differences in the construing of a group of people. In order to do this, the grids need to have the same elements and/or the same constructs. Hall suggests that an important area for future research is the extracting of shared aspects of construing in a given group and the use of feedback on construct systems for developing understanding of self and others. This is supported by Bannister and Fransella who claim there would be

'considerable interest in investigating the use of grids where the elements and constructs are drawn from areas of high public agreement'. (Bannister and Fransella, 1977, p.117)

The investigations in this thesis, which test the proposed curriculum evaluation process, are in areas of common concern for those participating. Therefore participants will, on the whole, use shared elements and constructs.

C. Uncertainties involved in the actual use of repertory grids.

For his third criticism, Beard draws on Yorke (1978) who warns about the uncertainties involved in the actual use of repertory grids. Yorke points out, for example, that the representativeness of the elements, the context in which they are construed, the choice of triads, dyads and so on, can fundamentally alter the nature of the grid. He recommends that a safeguard is to regard the administration of a grid as providing structure for a conversation and not as a test.
Pope and Keen observe that

'the grid is perhaps best seen as a catalyst within a conversation between investigator and the individual'.

(Pope and Keen, 1981, p. 55)

Beard (1982) also quotes Yorke as warning against making overconfident assumptions about the data resulting from analyses of grids.

Despite these criticisms Beard (1982) felt that Kelly's personal construct theory and repertory grid technique provided a highly flexible methodology on which to base his research.

Summary.

In this chapter an outline of personal construct theory is given and an examination made of repertory grid methodology, including various forms of grid analysis. Possible criticisms of personal construct theory and repertory grid methodology are discussed.
CHAPTER SIX
TOWARDS A CURRICULUM EVALUATION PROCESS

This chapter gives an account of the author's early application of personal construct theory and repertory grid methodology to the evaluation of teaching practice. From the experience gained in this research, a proposed curriculum evaluation process is developed.

Fransella, Pope, Keen and Beard are some of those who have been responsible for the growth in research into the educational implications of personal construct theory since the early 1970s. (Fransella, 1978; Pope and Keen, 1981; Beard, 1982) These studies illustrate a range of educational applications of personal construct theory and of the repertory grid methodology derived from it. Some of these published studies illustrate the use of elicited elements and constructs, others provide both elements and constructs. Some researchers use the triadic form of construct elicitation, others use a conversational approach. (Thomas and Harri-Augstein, 1975) The variety of research methods available illustrate Pope and Keen's (1981) comment.

"If one should choose to implement repertory grid techniques, there will be a need to adapt the general methodology to suit the specific purpose, as one cannot pull down a repertory grid off the shelf, so to speak. There will always be a need to explore and extract pertinent aspects of personal construct theory and repertory grid methods to suit particular needs." (Pope and Keen, 1981, p. 154)
An application of personal construct theory to the evaluation of teaching practice

In 1976, the author drew on personal construct theory to facilitate the identifying and sharing of perspectives by student-teachers and their supervisors in the teaching practice situation. It was decided, as time was a major constraint, to base the approach on the smallest unit possible - one student, one supervisor and one lesson. It was noted that Bannister and Mair (1968) comment that a repertory grid is not a quickly presented methodology.

After outlining the purpose and design of the approach to several supervisors and student-teachers, volunteers were invited. A graduate student-teacher, who had taught for a year in Australia, and a supervisor agreed to take part. The student-teacher planned a 45-minute mathematics lesson for 10-year-old pupils and, one week later, 12 pupils were taken to a studio where the lesson was videorecorded. The student-teacher and supervisor were asked to view the recording on separate occasions and to select events which, in their view, were significant to the development of the lesson. Each event was identified by recording the counter number at its beginning and end. In order to adequately sample the events in the lesson that were significant to both supervisor and student, as well as to the student and supervisor separately, it was decided to select 12 common events as well as 6 chosen by the supervisor alone and another 6 that were chosen by the student alone.

These events (about 15 seconds each) were then used as
the elements for a triadic form of construct elicitation. The events, which had been edited on to another tape, were shown in threes to the student-teacher and supervisor. They were asked to write down separately an important way in which two of the events were alike, but different from the third.

Examples of bi-polar constructs obtained were:

- children involved ............... children not involved
- recognition of children's achievement .... lack of recognition of children's achievement

The procedure was repeated until 12 bipolar constructs had been obtained for the student-teacher and another set of 12 bipolar constructs for the supervisor. Two grid matrices (one for the supervisor and one for the student) were constructed, by asking them to rate each event on a seven point scale, within their own set of bipolar constructs.

For example:

<table>
<thead>
<tr>
<th>Event no 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>children involved</td>
</tr>
<tr>
<td>teaching the whole class</td>
</tr>
</tbody>
</table>

and so on, for the rest of the bipolar constructs. The student's responses were scored and his grid matrix completed. This was also done for the supervisor.

A principle component analysis (INGRID 72) was carried out on the two grid matrices combined into one. After applying the Barlett test, five principle components were found to be significant in the analysis of the combined student
teacher/supervisor grid matrix. Then, by reference to the computer print-out of the principle component analysis, the constructs were listed under the principle components for which they were most heavily loaded.

A recorded discussion then took place between the student and the supervisor, as to the possible interpretation of each principle component. (The author was very much aware that it must not be assumed that mathematical relationships necessarily reflect psychological ones.) At this stage in the process, the student and supervisor expressed surprise at the 'reality' of the components that had emerged from the principle component analysis.

**Component one.**

This was interpreted as 'teacher's awareness of children's needs' and the major contributor to this component was the supervisor. She felt strongly that this was one of her most vigorously held criteria for evaluating teaching. The construct loading showed that for the supervisor, 'teacher's awareness of children's needs' was closely related to the balance between

- 'dealing with the whole class'
- and 'responding to individual children'.

The supervisor said that she saw this balance as one of the most difficult problems in classroom management. That is, finding the optimum compromise between the needs of the group and the needs of the individual.
Component two

This was a particularly interesting one in that it highlighted differences in perspective between student and supervisor. The student was the major contributor to this component which was interpreted as 'teacher's awareness of the effectiveness of his teaching'. The student asserted that this was something he felt strongly about. When asked to expand he said that effective teaching meant teaching mathematics successfully; this was his main aim, whether the children saw that as their need or not. The supervisor, however, felt that the student was putting too much emphasis on 'transferring information to the children, rather than meeting children's needs'. In the discussion that followed both the supervisor and student considered the reasons for their different perspectives. The supervisor was more experienced as a teacher. She was therefore probably more able to forget herself in the teaching situation and to concentrate on the children's needs as she perceived them. The student, who was soon to be on his final teaching practice, was conscious of his head of department's concern about how much mathematics the children would learn while he was in the school. He saw his role more in terms of teaching mathematics than meeting the children's social and emotional needs. However, in spite of their different perspectives, the student and supervisor were able to accept each other's position and found them to some extent predictable, considering their relative situations.
Component three

Both supervisor and student contributed to this component. It was interpreted as the tension between 'received' learning and 'guided discovery' learning. Both the student and supervisor agreed on the value of actively involving the children in the learning process.

Component four

Only the supervisor contributed to this component and it was interpreted as interaction between pupils as a means of bringing about learning.

Component five.

Again, only the supervisor contributed to this component and it was seen as giving instructions at the appropriate conceptual level.

The discussion

Both the student and supervisor claimed to have found the discussion very useful. They felt that they had gained considerable insight into each other's interpretation of the lesson. They agreed that their main emphases differed to some extent. The student was pleased that discussion of the components had brought out two issues: the value of interaction between pupils and the need for a greater understanding of the conceptual level of the children. The supervisor felt that perhaps her emphasis on meeting the needs of children led her to be somewhat neglectful of the teaching of subject content.
In order to explore whether the discussion (or as Thomas, in Howe, 1977, would call it, a learning conversation) had had an effect on the student's perceptions and on the supervisor's perceptions of the lesson, a second set of constructs were elicited from both supervisor and student using the same triads of events as before. Each of the events was then rated on a seven point scale, by supervisor and student-teacher, within their own new set of bipolar constructs. INGRID was again used, but this time, simultaneously on all four grid matrices (that is, student-teacher before and after the discussion plus supervisor before and after the discussion). This time, seven principle components were revealed. The computer print-out of each component was then presented to the supervisor and the student-teacher. Each component was composed of two lists, one of significant constructs before the discussion and one of significant constructs afterwards. The identification and labelling of the components was then carried out by discussion, as before. This discussion centred first on the observation that this second principle component analysis had produced seven significant components as compared to five on the first analysis. Also, whereas the student-teacher had contributed to only three components in the first analysis, this time he had contributed to six. Both student and supervisor felt that the discussion had encouraged them to construe the lesson in some new ways. This can be illustrated by referring to component one in the second analysis, which followed the discussion. Both student and supervisor felt this component was similar to component
one of the first analysis. It was interpreted as

'teacher's awareness of children's needs as especially applied to balancing the needs of the class as a whole against the needs of individuals'.

But what seemed particularly interesting was the increased contribution of significant constructs by both supervisor and student to this component, after the discussion. It appeared that not only did the student now give more value to this component but that the supervisor's attitude was strengthened too. Another illustration of possible exchange of meaning was in component four. Again, like the component four of the first analysis, this was interpreted as the use of interaction between teacher and child as compared with the interaction between child and child to facilitate learning. Whereas, in the first analysis, only the supervisor had contributed a significant construct to this component; following the discussion, the student had contributed two constructs and the supervisor one.

Disadvantages of this approach

It was felt that this form of the repertory grid had a number of disadvantages if it were to be considered for wider application.

a) The triadic method of eliciting constructs takes a lot of time and is a tiring procedure.

b) The recording and playback of the classroom events meant that there was a heavy dependence on equipment.

c) Access to a main frame computer was necessary in order to
carry out INGRID.

d) The principle component analysis print-out was a very complex one and needed a lot of patience on the part of the participants to understand the analysed data. Perhaps, on this occasion, participants understood the analysed data because they were both familiar with statistical procedures. It was felt that principle component analysis might be too unwieldy a statistical procedure for wider use in the College's teaching practice supervision.

It was felt, therefore, that although this approach had enabled each other's perspectives to be readily identified and had led to a deeper understanding and sharing of their own and each other's perspectives, this particular process was not readily transferable to the usual working relationship between supervisor and student-teacher. But, of course, that did not necessarily mean that a more appropriate application of personal construct theory could not be found. It was possible that another form of repertory grid methodology could be used. There was evidence that the repertory grid was very adaptable (Bannister, 1970; Bannister, 1977). A decision was made to explore another form of the repertory grid.

Another approach to the evaluation of teaching practice arising from personal construct theory

Again, the author decided to base this approach on one student-teacher and one supervisor. The student-teacher in this investigation was also on a PGCE course but was teaching English and Religious Education in a small, mixed,
urban, secondary modern school. It was agreed that the elements would be

'the lessons taught by the student and observed by the supervisor'.

The next step was to decide a method of eliciting the constructs. Hall (1978) mentions a range of informal or conversational methods and the author had been exploring their use, following the first case study. He had tried various informal ways of eliciting constructs (and the use of various rating scales) with teachers reading a B.Ed (CNAA) for Serving Teachers. As a result of this experience, it was decided to use a conversational approach to eliciting constructs. The student and supervisor discussed a large number of criteria that could be used to evaluate the quality of lessons. Fifteen of these criteria were selected and written as bipolar constructs on an evaluation sheet. (It was also agreed that any of these constructs could be discarded or modified during the practice, as a result of experience or discussion.)

The evaluation sheet used is printed on the next page.
## EVALUATION SHEET

<table>
<thead>
<tr>
<th>Element Description</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adequate control</td>
<td>YES!</td>
</tr>
<tr>
<td>Rapport established</td>
<td>YES!</td>
</tr>
<tr>
<td>Stimulating voice</td>
<td>YES!</td>
</tr>
<tr>
<td>Appropriate objectives</td>
<td>YES!</td>
</tr>
<tr>
<td>Adequate pace</td>
<td>YES!</td>
</tr>
<tr>
<td>Class organisation satisfactory</td>
<td>YES!</td>
</tr>
<tr>
<td>Appropriate techniques and methodology</td>
<td>YES!</td>
</tr>
<tr>
<td>Aware of learners’ needs</td>
<td>YES!</td>
</tr>
<tr>
<td>The children learn what is intended</td>
<td>YES!</td>
</tr>
<tr>
<td>Appropriate proportion of higher order questions</td>
<td>YES!</td>
</tr>
<tr>
<td>Interesting and stimulating</td>
<td>YES!</td>
</tr>
<tr>
<td>Opening the lesson was satisfactory</td>
<td>YES!</td>
</tr>
<tr>
<td>Finishing the lesson was satisfactory</td>
<td>YES!</td>
</tr>
<tr>
<td>Blackboard work was adequate</td>
<td>YES!</td>
</tr>
</tbody>
</table>

The rating scale (YES!Yes yes? no? No! NO! NO!) arose during a discussion between the author and an evaluation officer from the Schools Council, on the shortfalls of the method used in...
approach one. Discussion also took place on whether there should be a mid point on the rating scale. Hall (1975) comments on the ambiguity of a mid point; it may be used to represent the mid point of a continuum, or it may indicate that the particular construct does not apply to that element. Hence, it was agreed that a mid point would not appear on the rating scale. It was also decided that both poles of each construct ought to appear, but that the implicit pole would be put in brackets following the 'NO!' part of the rating scale. Hall (1978) suggests that repertory grids employing rating scales are perhaps best used by presenting the participant with an evaluation sheet for each element. This method was adopted. Each evaluation sheet contained a space for the element to be written and all the bipolar constructs set out with the rating scale, as above, placed against each construct. Completion of an evaluation sheet merely involved ringing the response on each rating scale, seen as most appropriate by the participant. A fresh evaluation sheet was used for each element until all elements had been rated using the bipolar constructs agreed by participants.

Having obtained ratings for all the elements on each of the constructs, these were scored and entered on a grid matrix.
EXAMPLE OF A SIMPLE GRID MATRIX

A student-teacher considering the quality of his teaching in 4 lessons.

Elements: lesson 1 lesson 2 lesson 3 lesson 4

<table>
<thead>
<tr>
<th>Constructs</th>
<th>lesson 1</th>
<th>lesson 2</th>
<th>lesson 3</th>
<th>lesson 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formal/informal</td>
<td>4</td>
<td>2</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>well presented/poorly presented</td>
<td>3</td>
<td>2</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>stimulating/boring</td>
<td>4</td>
<td>2</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>controlled/chaotic</td>
<td>3</td>
<td>1</td>
<td>4</td>
<td>2</td>
</tr>
</tbody>
</table>

As explained in the previous chapter, internal relationships within a grid matrix can be explored by visual inspection, hand sorting or by more complex statistical analyses. Since the elements in this approach were to be ‘the lessons taught by the student teacher and observed by the supervisor’ a grid analysis could only be carried out at the end of the teaching practice. Although this might have been of value, it would not have given the immediate feedback and opportunity for discussion after each lesson, which is so important in teaching practice. After each lesson observed by the supervisor, an evaluation sheet on that lesson was completed by student-teacher and supervisor, separately and independently.

The discussion

The student’s and supervisor’s evaluation sheets were then
compared by the supervisor and student, in each other's presence. Similarities and differences in the perspectives of the student and supervisor were noted and discussed and implications for future lessons were considered. In the deliberation on the first lesson, the supervisor and the student teacher were surprised to find that they only agreed on one construct rating, and this was 'rapport'. Then they considered each response in turn, throughout all the evaluation sheets, discussing the similarities and differences in perspectives. For 'adequate control' the supervisor had ringed the 'No', but the student had responded with a 'Yes'. The supervisor said that she was amazed that the student thought he had had reasonable control. The student-teacher retorted that she must be quite unaware of what was going on in many other classes in the school. This then led to a consideration of what might constitute adequate control and the different ways in which control was maintained within a school. The student, although annoyed with the supervisor's negative view of his 'control', said he was glad of the opportunity to express his views and defend his position. He also said that this was the first time that he had been in what he described as 'a negotiating position.' The construct 'stimulating voice' was then discussed. Again there was a difference in perspective: the supervisor responding with a 'No' and the student with 'Yes'. The student claimed he had read a rather boring text in as interesting a way as he could. The supervisor then asked him why he had stayed so close to the text if he had found it so
uninspiring. She claimed that in his position she would have forgotten the book and told the story directly, emphasising the parts that appeared to 'capture the pupils' interest. This led to quite a heated debate on how best to tell stories. Although the student-teacher said he was hesitant at leaving the security of the open book, the supervisor said she would like to see him move around the classroom, acting out the story and involving the pupils. (The supervisor was interested to note that on her next visit this was the style that the student had adopted when telling another story. The student said that he was surprised at the success he had achieved in using this approach to story telling.)

The deliberation continued until all the responses on both the supervisor's and the student's evaluation sheets for that lesson had been considered.

Student-teacher and supervisor continued to complete evaluation sheets for each lesson attended by the supervisor, until the practice was over. As the practice progressed they found that although their perceptions of each situation often differed, both said that they had learned to consider each other's viewpoint and sometimes to accept it. For example, in a first year Religious Studies lesson, supervisor and student still differed with regard to judgements of adequate control. The student believed he had reasonable control, considering the situation. The supervisor still maintained that he needed a more structured approach. This led to a discussion about how a teacher could give the class legitimate reasons for
leaving their seats in a Religious Studies lesson. Drama was considered but the student was sceptical.

An appraisal of this approach

At the end of the practice student and supervisor discussed this approach. Both said that they found the planning, completing and discussing of the evaluation sheets a useful process. The student-teacher stressed that his involvement in this evaluation procedure had allowed him to attempt an appraisal of his teaching and, when necessary, as he saw it, a defence of his teaching. The student felt that this procedure would give other student-teachers a facility not always available to them. The supervisor felt that a "more equal" dialogue had developed. The process seemed to facilitate the expression of points of view. The supervisor, who was the same tutor as in approach one, felt that this approach compared favourably with the more traditional approach used in the author's previous investigation. This process was not as time-consuming, nor as dependent on equipment. It was practicable during the time available and had assisted in structuring the discussion and, in particular, in facilitating the expression of perspectives. Actual changes in the student-teacher's teaching were observed and could be related to issues covered in the deliberations.

A comparison of the two approaches

In the author's first approach a traditional use of repertory grid methodology was employed and involved the following stages.
A. Negotiating purpose.
B. Eliciting the elements.
C. Triadic elicitation of the constructs.
D. Assigning elements to positions on the constructs.
E. Scoring the responses.
F. Transferring the scores to a grid matrix.
G. Statistical analysis of the grid data.
H. Examination of the analysed data and labelling of the significant components by the participants.
I. Deliberation based on H.
J. Triadic elicitation of new constructs using the same elements as in B.
K. Assigning the elements to positions on these new constructs.
L. Scoring the responses.
M. Transferring the scores to grid matrix.
N. Statistical analysis of the grid data.
O. Examination of the analysed data and labelling of the new significant components by the participants.
I. Deliberation based on H and O. to explore possible exchange of meaning.

But in the author's second approach, only the following stages were used.

A. Negotiating purpose.
B. Eliciting the elements.
C. Informal conversational elicitation of the constructs.
D. Assigning elements to positions on the constructs - on evaluation sheets.

E. Deliberation based on the perspectives revealed by the completed evaluation sheets.

This modified approach had structured the discussion in such a way that the supervisor and student felt enabled to explore their own and each other's perspectives and it was therefore decided to investigate this modified and abbreviated form within a wider context than just the evaluation of teaching practice. This finding is similar to the argument put forward by Thomas (1977, in Howe, 1977) who claims that the conversational elicitation of elements and constructs can in itself be a learning experience. The elicitation conversation is like a participative interview. Issues may be raised during the elicitation which otherwise might remain undiscovered. He lists the main phases of this conversation as

a) negotiating purpose
b) eliciting and agreeing the elements
c) eliciting the constructs
d) assigning elements to positions on the constructs

(Thomas, in Howe 1977, p.88)

When the elicitation of elements and constructs is a cooperative venture, individuals are still able to define their own viewpoint. They can add personally relevant constructs or elements or show their individuality in the way they assign elements to positions on the constructs.
Summary.

The author's early experiences with personal construct theory and repertory grid methodology are described and his belief that, in his second approach, he had the basis for a curriculum evaluation process. The curriculum evaluation process proposed in this thesis derives from this second approach; its structure and application in nine educational settings is discussed in the next chapter.
CHANGH SEVEN

THE PROPOSED CURRICULUM EVALUATION PROCESS
AND ITS INVESTIGATION IN RANGE OF EDUCATIONAL SETTINGS

This chapter sets out the proposed curriculum evaluation process, arising out of a consideration of theory and practice described in previous chapters. Accounts are then given of the application of this process in a range of educational settings.

Rationale for the proposed curriculum evaluation process

This rationale arises from previous chapters and requires a brief restatement of theory and practice explored in those chapters.

Problems associated with curriculum evaluation are practical ones; decisions have to be made about what to do. It has been argued that deliberation is the method for dealing with practical problems. Deliberation involves the identification of the issue, the discovery of one's own and others' perspectives and their educational implications, possible solutions to the problem, and a decision as to what solution might be the most appropriate for that context. In order to identify a wide range of possible solutions, it is necessary to draw on as many perspectives as possible. A theory that recognises individual differences in perspective, is personal construct theory; for the individuality corollary states that

'persons differ from each other in their construction of
events'. Individuals can appear to have identical experiences and yet behave very differently, because they construe the events differently. Thomas (1979) stresses the value of exploring these different construings in his complementarity corollary

'Thomas stresses the value of exploring these different construings in his complementarity corollary:

'When people share in a common pool of events including each other, but by virtue of their position sample these events differently, their constructions of experience develop to complement each other.' (Thomas, in Stringer and Bannister, 1979, p. 66)

Repertory grid methodology was developed as a way of discovering individual construing and involved, in the original repertory test, the eliciting of elements and constructs, and the assigning of these elements within the constructs. Thomas (in Howe, 1977, p. 88) argues that the conversational elicitation of elements and constructs, and the assigning of those elements to positions on the constructs, can be a learning experience, in which one person begins to understand another.

The first investigation (Rolph, 1976) was based on personal construct theory and a form of repertory grid methodology involving a statistical analysis. The second investigation was also based on personal construct theory and repertory grid methodology, but explored a modified approach, and involved the following stages.

a. Negotiation of purpose.
b. Elicitation of elements.
c. Elicitation of constructs.
d. The assigning of the elements on the constructs, using
rating scale.
e. Deliberation based on the assigning of the elements.
f. Possible recommendations for change.

This approach permits individuals, as part of a cooperative venture, to express their own perspectives. They can add personally relevant constructs and elements, and show their individuality in the way they assign elements to positions on the constructs, and examine the personal meanings attributed to element and construct labels in the deliberation.

As the results obtained with this modified approach were encouraging, it has been adopted as the basis for the proposed curriculum evaluation process explored in this thesis.

The proposed curriculum evaluation process presents a) to f) above, in the following stages.

THE PROPOSED CURRICULUM EVALUATION PROCESS

STAGE ONE: The identification of the curriculum issue chosen for evaluation and identification of the elements derived from the issue.

STAGE TWO: The discovery of the various perspectives of those involved.

a. The identification of the constructs by which each element is to be evaluated.

b. The compilation of the evaluation sheets

c. The completion by participants of an evaluation sheet for each element.
STAGE THREE: Deliberation by all the participants, based on the perspectives revealed by the completed evaluation sheets.

STAGE FOUR: Written summaries of deliberations - to include for example, recommendations for changing the curriculum, forward planning, implications for staffing and other resources.

STAGE FIVE: An account of what happened in the institution arising out of stage four.

Notes on the stages

In stage 1, the purpose is negotiated and the elements are elicited.

In stage 2(a) the constructs are elicited and in stage 2(c) the elements are assigned to positions on the constructs.

In stage 3, the different perspectives are explored as a basis for deliberation, and from which a range of solutions may emerge.

Stages 4 and 5 involve the recording of the deliberation and the implementation of appropriate solutions.

THE RANGE OF EDUCATIONAL SETTINGS

During the period 1979 to 1984, the proposed curriculum evaluation process was investigated in the following educational settings.

Investigation no.1

"Evaluation of an In-service B.Ed Course"

Shared elements and constructs were elicited from a group of 10 teachers and led to the compilation and completion of evaluation sheets. Recommendations for change emerged and were incorporated into the resubmission to the CNAA, when the time came for this degree to be revalidated. These changes
were accepted by the CNAA.

Investigation no.2
‘Evaluation of an M.Ed/B.Phil Course at a University’
A group of 17 students used shared elements and constructs.
in the evaluation of their university course.

Investigation no.3
‘The evaluation of a whole curriculum in a secondary school’
In this investigation, teachers used personal elements but shared and agreed constructs. An account is given of how the recommendations for change were put into effect in the school.

Investigation no 4.
‘The evaluation of a personal and social education course’.
Only two participants took part; the teacher and a tutor who provided the proposed curriculum evaluation process. The teacher used personal constructs and personal elements in a deliberative approach involving both of them.

Investigation no 5.
‘Reviewing the organisation of the upper juniors in a primary school’
Shared elements and shared constructs were elicited from a group of five teachers. An account is given of how the recommendations for change arising from the deliberation were put into practice.
Investigation no. 6.

'The evaluation of a secondary school's short residential weekend in-service course'

This was based on one shared element and a very long list of shared constructs.

Investigation no. 7.

'Two teachers evaluating their own and each other's teaching'.

In this investigation personal elements and constructs were elicited.

Investigation no. 8

'The review of a course for those involved in the MSC's Youth Training Scheme

Shared elements and constructs were used in this investigation.

Investigation no. 9

The evaluation of nine mathematics topics by teachers on a Mathematics Diploma Course.

Shared elements and constructs were elicited in this investigation.
INVESTIGATION ONE
REVIEWING AN IN-SERVICE B.ED COURSE

Shortly after completing the two investigations into facilitating dialogue between student-teachers and their teaching practice supervisors, a request was made for assistance with the evaluation of the In-service B.Ed (CNAA) course at a college of higher education. It was decided to ask ten teachers, who had successfully completed this degree course, to evaluate their course using the curriculum evaluation process proposed in this thesis. Only one three-hour session was available for this evaluation. The session began with a brief outline of personal construct theory and its possible application to curriculum evaluation.

STAGE ONE The identification of the issue and the elements

After a discussion with the B.Ed (CNAA) Course leader, it was decided that the issue would be

'The B.Ed (CNAA) Course (1977-81) at this College'

The elements were then elicited from the teachers, as a group, by asking them to identify those aspects of the course that had been significant to them. The elements chosen were:

i. Course units A, B, and C. (named components of the B.Ed Course)

ii. Visiting lecturers

iii. Seminars

iv. Tutorials
v. The Elective
vi. The Project
vii. The formative assessments
viii. The summative assessments

The author and the tutor involved in this evaluation were rather surprised by the elements that were identified by the teachers, as they had been anticipating the 'named components of the course', eg. 'Learning and Development'; 'School and Community' and so on. Only three such course components were included in the teachers' list of elements; the rest being mainly concerned with assessment.

STAGE TWO: The discovery of the various perspectives of those involved

Stage 2a. The identification of the constructs by which each element was to be evaluated

Since a conversational method of eliciting constructs is published in several papers (for example, Thomas and Harri-Austein, 1975), and did enable participants to identify constructs in the author's second approach to evaluating teaching practice, it was decided to employ this method throughout the investigations. The teachers were asked to think about the criteria they would use to judge the worthwhileness of the elements they had identified. It was explained that these criteria must apply to all the elements and not be restricted to one or two. (This was to ensure that all the constructs derived from the criteria would be within the range of convenience of the elements.) As each criterion was suggested by someone within the group, it was written on
the blackboard. It was then discussed and modified, if necessary, to ensure that there was agreement as to the meaning.

Stage 2b. The compilation and production of evaluation sheets.
The evaluation sheets were then compiled by expressing each criterion as a bi-polar construct and arranging the poles on an evaluation sheet and enough duplicated for all the elements to be evaluated by each student.

(The evaluation sheet is on the next page.)

Stage 2c. The completion by participants of an evaluation sheet for each element.
The evaluation sheets were completed by ringing the response on the rating scale that was seen as most appropriate for that element in terms of that particular construct.
EVALUATION SHEET FOR IN-SERVICE B.ED (CNAA) COURSE

ELEMENT DESCRIPTION:........................................

(Instructions please write the first element on these dotted line and then complete the evaluation sheet by ringing your responses on all the rating scales. When completed, take a second evaluation sheet and complete it for the second element and so on, until all elements have been rated by you. At the end of this, please staple all the evaluation sheets together into a booklet.)

<table>
<thead>
<tr>
<th>CONSTRUCTS</th>
<th>RATING SCALE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. It was relevant to my teaching</td>
<td>YES! Yes yes? no? No NO! (It was irrelevant to my teaching)</td>
</tr>
<tr>
<td>2. It had a beneficial impact on my school</td>
<td>YES! Yes yes? no? No NO! (It had no effect on my school)</td>
</tr>
<tr>
<td>3. It helped me to relate theory to practice</td>
<td>YES! Yes yes? no? No NO! (It did not help me to relate ...)</td>
</tr>
<tr>
<td>4. It was well organised</td>
<td>YES! Yes yes? no? No NO! (It was poorly organised)</td>
</tr>
<tr>
<td>5. It was interesting</td>
<td>YES! Yes yes? no? No NO! (It was boring)</td>
</tr>
<tr>
<td>6. It furthered my career</td>
<td>YES! Yes yes? no? No NO! (It has made no difference)</td>
</tr>
<tr>
<td>7. It encouraged me to use new approaches</td>
<td>YES! Yes yes? no? No NO! (It made no difference ...)</td>
</tr>
<tr>
<td>8. It made me critically reflect on my teaching</td>
<td>YES! Yes yes? no? No NO! (It did not help me to ...)</td>
</tr>
<tr>
<td>9. It increased my confidence</td>
<td>YES! Yes yes? no? No NO! (It decreased my confidence)</td>
</tr>
<tr>
<td>10 Satisfactory support was provided</td>
<td>YES! Yes yes? no? No NO! (Unsatisfactorily supported)</td>
</tr>
<tr>
<td>11. It had an appropriate amount of time</td>
<td>YES! Yes yes? no? No NO! (Inappropriate amount of time)</td>
</tr>
<tr>
<td>12. It introduced me to new ideas</td>
<td>YES! Yes yes? no? No NO! (It did not introduce...)</td>
</tr>
</tbody>
</table>

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STAGE THREE: Deliberation by all the participants based on the perspectives revealed by the completed evaluation sheets.

The deliberation was started by selecting the first element and began with the first construct. The participant with the most positive response on that particular rating scale was invited to discuss his or her perspective with the participant with the most negative response on that same rating scale. The other participants, the author and the other tutor present were drawn into the deliberation as it developed. The deliberation proceeded by considering the responses to the next construct on the evaluation sheet, and so on, until all the constructs had been considered. Comprehensive notes on the deliberation were taken.

The following is a summary of the main points of this deliberation.

The first point to emerge in the deliberation was the concern about the major assessments. The Project, Elective and the remaining summative assessments were all perceived favourably by these ten teachers. The reasons for this attitude became clear. In all these assessments, teachers were permitted to choose the precise wording of their titles. This enabled them to select titles which they felt would be significant to their teaching situation. The attitude towards formative assessments, on the other hand, was quite different and in marked contrast to the attitude shown by the two course tutors involved in the evaluation. These two staff saw
formative assessments as a useful way of monitoring course members' progress without the fear of assigning a summative grade to the work. The course members, on the other hand, felt that if effort had gone into a piece of work, it should be summatively assessed. However, they did see the advantage of some early assessments being formative. Perhaps the best solution, they said, would be to make all assessments potentially summative and, at the end of the course, students could choose (say) their best six grades out of nine.

It has already been mentioned that the tutors involved in the review were surprised that the teachers had only identified three taught course components as elements. It became obvious during the deliberation that to the teachers the 'sorts of learning experiences' they encountered (that is, lectures, tutorials, working by themselves, visiting lecturers and so on) were more important than the taught course components as such.

The deliberation then moved on to consider the relatively low ratings given to seminars. One of the basic assumptions of In-service courses is that the teachers themselves bring valuable experience to the course and hence, group activities, like seminars, will be worthwhile learning experiences. The predominant impression that came out of the deliberation at this point was that seminars needed to be more highly structured, if they were to be of real value. The expectation that a seminar should be spent discussing points arising out of the preceding film or lecture was not enough to ensure a worthwhile seminar. This part of the
deliberation concluded with both teachers and tutors agreeing that more thought should be given to the use of seminar time. Visiting lecturers were rated very low on most participants' evaluation sheets. However, the deliberation revealed that this was not because the visiting lecturers were perceived as unsatisfactory. It was considered that there had been too few to make a significant contribution to the course and it was suggested that more should be included in the course. The meaning of the low rating of visiting lecturers highlighted the importance of using the evaluation sheets as a basis for deliberation rather than taking them at face value.

STAGE FOUR: Written summary of deliberation
A full account of the deliberation was written and submitted to those involved in this evaluation, and when it was agreed that the document contained a fair reflection of what was said, a paper was written and submitted to the College's Review Committee. The paper included the following recommendations.

1. All assessments should be potentially summative and, at the end of the Course, students should be able to choose to present, say, their best six grades out of a total of nine.
2. Seminars should be more structured and pre-reading should be specified.
3. The central importance of the Project should be maintained.
4. The inclusion of more visiting speakers on the Course
should be explored.

STAGE FIVE: An account of what actually happened in the Institution arising from stage four

In January 1984, the College submitted its B.Ed for serving teachers to the CNAA for revalidation. Part of the document containing the course proposals was devoted to a review of the B.Ed course to date. The paper giving details of the above deliberation was included in this submission and hence was read and considered by the visiting CNAA party.

Among the changes in the new degree course, arising from this evaluation, was the decision to make all assessments potentially summative, and to give course members the opportunity to select a proportion of assessments they wished to count towards their degree. A significant increase in the time spent on the Project was also agreed.

Comments arising from Investigation one

1. The curriculum evaluation process was considered by the participants to be a useful one in revealing and encouraging the exploration of the various perspectives of those involved.

2. It was felt, in retrospect, that valuable information could have been obtained from the teachers, if all the taught components had been included in the list of elements. Perhaps a combination of "provided" and "elicited" elements would have led to a more effective review. (When the proposed curriculum evaluation process was used for a second review of
the B.Ed (CNAA), some elements, including all the taught components, were provided. Nevertheless, participants were asked to delete, modify, or add to the provided elements.)

3. The teachers in this investigation had experienced the triadic method of construct elicitation. They said that they found the conversational form of elicitation more acceptable.


5. Although the proposed curriculum evaluation process was not the only method of review used to evaluate the B.Ed (CNAA) Course, it was encouraging to find that all stages in the proposed process were completed and that recommendations for change were implemented.
A request was received for assistance in the appraisal of an M.Ed/B.Phil Course in Curriculum Studies. The time available for the evaluation was limited to two sessions, each lasting about two and a half hours. The students on the current course and two of the tutors would be present, making a group of about 20. The venue was to be the School of Education at a University.

Session One
The group was given a brief introduction to personal construct theory and repertory grid methodology and how they had influenced the author in the design of the curriculum evaluation process to be used in this evaluation.

STAGE ONE The identification of the issue and the elements
Three sets of elements arising from three issues for review arose from the first group discussion.

1a. Issue for review
Forms of assessment in the M.Ed/B.Phil Course (1981/2) in Curriculum Studies

Elements
Essays
Dissertation
Practicals
2a. Issue for review

'The course components in the M.Ed/B.Phil Course (1981/2) in Curriculum Studies'

Elements
The first term curriculum course
The second term curriculum course
The first term psychology course
The second term psychology course
Subsidiary courses specific to particular students

3a. Issue for review

'The lunch time lectures in the M.Ed/B.Phil (Exon) Course (1981/2) in Curriculum Studies'

Elements
The programmed lunch time lectures

STAGE TWO: The discovery of the various perspectives of those involved

Stage 2a. The identification of the constructs by which each element is to be evaluated.

As in the previous investigation, it was decided to use an informal conversational method of eliciting constructs. The group members were asked to suggest constructs they could use to judge the worthwhileness of the three sets of elements they had identified. It was explained that these constructs must apply to all elements within a set. As each construct was suggested by someone within the group, it was written on a blackboard, discussed and modified, if necessary, to ensure that there was agreement as to meaning.
Stage 2b  The compilation and production of evaluation sheets.

Books of evaluation sheets were made up for each issue, as in investigation one. An example is given here of the first issue for review.

EVALUATION SHEET FOR M.ED/B.PHIL COURSE 1981/2

First issue for review -

'Forms of assessment in the M.Ed/B.Phil Course (1981/2) in Curriculum Studies'

ELEMENT DESCRIPTION: ..........................................................

( Instructions Please write the first element here and then complete the evaluation sheet by ringing your responses on all the rating scales. When completed, take a second evaluation sheet and complete it for the second element and so on, until all elements have been rated by you.)

CONSTRUCTS                     RATING SCALE

1. The title of this element was given early enough  YES! Yes yes? no? No NO! early enough)

2. Title was sufficiently negotiable YES! Yes yes? no? No NO! negotiable.)

3. This element was based on my professional interest YES! Yes yes? no? No NO! my ......)

4. There was sufficient time between this element and the next YES! Yes yes? no? No NO! next were crowded)

5. Sufficient guidance was given for this element YES! Yes yes? no? No NO! (Insufficient ....)

6. The form of marking was helpful YES! Yes yes? no? No NO! (Unhelpful)

7. Knowing the grade for this element was important YES! Yes yes? no? No NO! difference ..)

8. There was sufficient follow up YES! Yes yes? no? No NO! (No follow up)

9. This was an appropriate form of assessment YES! Yes yes? no? No NO! (Quite inappropriate)
Stage 2c The completion by participants of an evaluation sheet for each element.

The evaluation sheets were completed by ringing the response on the rating scale that was seen as most appropriate for that element in terms of that particular construct.

STAGE THREE: Deliberation by all participants based on the perspectives revealed by the booklet of completed evaluation sheets.

The deliberation was started by selecting the first element and, beginning with the first construct, asking a participant with a strongly positive response on the particular rating scale to discuss his or her perspective with the participant with a strongly negative response on that same rating scale. The other participants were drawn in as the deliberation developed. Comprehensive notes on the deliberation were taken by the two tutors and the author of this thesis. The following is a summary of the main points of the deliberation on the first issue for review -

"Forms of assessment in the M.Ed/B.Phil Course (1981/2) in Curriculum Studies"

a) Negotiating the titles for assignments.
It was agreed that titles were sufficiently negotiable although it was emphasised that help with the wording of titles is important.

b) Spacing of essay hand-in dates.
This was generally acceptable.
c) **Marking of essays.**

Some students did not find the marking helpful, as there was not always enough comments accompanying the grades. The Course Tutor stressed that the process of writing was more important than the grade. There was general agreement among students that if an essay was graded, then the author of that essay had a right to know the grade, and why it had been awarded.

d) **Follow up of essays.**

One student said he found it strange that if essays were such an important part of the course, there was so little follow up. Another student reminded the group that special tutorials could always be had on request. (At several times in the deliberation, it was highlighted that students varied in their willingness to ask for tutorials.)

e) **Support during essay writing.**

All students felt that support during essay writing, especially for the early essays, was desirable.

f) **Forms of assessment.**

It was regarded rather a pity that essays and dissertations were the only forms of summative assessment on the course.

g) **Practical work**

There was general agreement that practical work was a valuable part of the course. Some students had immersed themselves in their practical work, but others had been hampered by poor planning. Some students would have welcomed
more guidance in the choice of topic area. There was a
tendency to get too involved in practical work. There was
also concern that some students had done the 'foot slogging'
for the practical work, but had been excluded from the final
results. Others expressed the view that being involved in the
process was more important than having any control of the
product.

**STAGE FOUR: Written summary of deliberations**

Full accounts of all three deliberations were written up
and submitted to those involved in the evaluation and when it
was agreed that the document contained a fair reflection of
what had been said, a paper was written and sent to the
Course Leader who had commissioned the evaluation.

**STAGE FIVE: An account of what actually happened in the
institution arising from stage four**

Nothing was learned by the author concerning this.

**Comments arising from Investigation Two**

At the end of session two, there was only limited time
available to discuss the curriculum evaluation process with
the participants. They were therefore invited to send, in
writing, their opinions of the process, and anything else they
wanted to add to the review of the course. Seven letters
were received, and a summary of the verbal and written
comments follow.

1) There was a general feeling expressed at the end of
session two and in the letters that the evaluation exercise
had been worthwhile, constructive and warranted more time spent on it.

2) It was felt that the use of the

YES! Yes yes? no? No NO!

scale encouraged participants to commit themselves, and this was valuable in discovering the different perspectives within the group.

3) The comparison of participants' ratings on the evaluation sheets had motivated the group, and brought to light most of the contentious areas of the course.

4) It was felt that the process had evoked a response from everyone and encouraged participation. It had also revealed how individuals and groups reacted to different situations.

5) There was a consensus that a deliberative evaluation, drawing on the perspectives of those involved, should be an essential part of any curriculum course, and an ongoing practice in schools.

6) Several of the letters expressed doubt whether the students were as free in expressing their opinions in the presence of the tutors, as they would have been in their absence. Although it is interesting to note that nothing new was said about the course in the letters received; opinions, however, were expressed more strongly.

7) Several of the students expressed their intention of using the process in their final project or when they returned to their schools.
Author's comments arising from investigation two

1) It became obvious early in stage one that if all the elements identified by the group were to be considered, they would not fall within the range of convenience of one set of constructs. It was therefore decided that, rather than fail to deliberate on elements regarded as significant to the students, the elements would be divided into three groups, each with their own set of constructs.

2) The group was rather large for free participation in the deliberation by all the members. There was a tendency for some individuals to dominate discussion. With groups of this size, it is probably more fruitful when exploring a range of perspectives to arrange for smaller groups for the deliberation.

3) With a large, lively group who had so much to say, there was not enough time to permit participants to say all that they wanted. For a satisfactory curriculum evaluation to take place, sufficient time must be allocated and participants must be aware, and accept, that evaluation is a time-consuming process.

4) Contact has been maintained with several of the students who adopted the process in their own research, for example, in discovering attitudes to geography teaching.
INVESTIGATION THREE

THE EVALUATION OF A WHOLE CURRICULUM IN A SECONDARY SCHOOL

On October 22nd 1981, a Senior County Secondary School Adviser, the Headteacher of a two form entry secondary modern school and the author of this thesis met to discuss the possibility of testing the author’s curriculum evaluation process in the Headteacher’s school. The Headteacher agreed to put a proposal to the next meeting of the School’s Curriculum Coordinating Committee. This comprises the senior management team and twelve staff representing the school’s subject departments. At this meeting the stages in the curriculum evaluation process were outlined and questions answered.

STAGE ONE: The identification of the issue and the elements

At a meeting on November 10th 1981, the Curriculum Coordinating Committee agreed to take part in the project. It was also decided that the issue would be

‘the whole curriculum 11-16’

and that all teaching staff would take part in the review. This would be tackled by inviting each teacher to evaluate four elements -

The elements -

1. My main teaching subject as taught to years one to three.

2. My main teaching subject as taught to years four and five (examination classes)

3. My main teaching subject as taught to years four and five (non-examination classes)
4. My view of the school curriculum as a whole.
This was approved at the next staff meeting.

STAGE TWO: The discovery of the various perspectives of those involved

Stage 2a. The identification of the constructs by which each element is to be evaluated

The author was asked to describe the proposed next stage in the curriculum evaluation process. It was explained that the teachers would be invited to design an evaluation sheet consisting of constructs, a rating scale and a space for writing the description of the element. Examples were given to illustrate these terms. An informal conversational methodology would be used to elicit constructs from the teachers. The constructs would be derived from the questions which could be asked to judge the worthwhileness of the four elements already identified. It was explained that these questions must apply to all the elements and not be restricted to one or two. (This was to ensure that all the constructs derived from the questions would be within the range of convenience of the elements.) Each question would then be expressed as a bi-polar construct and arranged on either side of a rating scale to compile an evaluation sheet.

After discussion, it was agreed that the questions would be derived from two sources - the school's aims and a range of recent documents published on the school curriculum. The documents to be consulted were agreed as follows: The School Curriculum, HMSO, 1981; Curriculum 11-16 DES, 1977; A View of
The Curriculum Coordinating Committee met on 25th January 1982 and decided that, before the constructs for each element could be written, the current school's aims ought to be examined and, if necessary, amended. This was done on March 1st 1982. Then on 26th April 1982, the Curriculum Coordinating Committee met to discuss how to arrive at the set(s) of questions from which the constructs would be derived. It was agreed that the Committee would separate into four working parties; each would agree on a set of questions. One working party would base its questions on the documents *The School Curriculum* and *A View of the Curriculum*, the second working party on *Curriculum 11-16*, a third one on the amended aims of the school and the fourth on *Skills for Working Life* and *The New Training Initiative*

**Stage 2b. The compilation and production of evaluation sheets.**

Each of the four working parties produced a list of questions as agreed. They were sent to the author on 26th May 1982. He redrafted them into constructs. An example will illustrate this. One of the questions from the group working on the amended school aims was

'Does the school, through its existing curriculum, equip pupils to use language effectively?'

The author redrafted this question into the following bipolar construct.
This element equips pupils to use language effectively. ... ... ... effectively.

In redrafting all the questions from the four working parties, the author produced three evaluation sheets under the following headings. 1. The School Aims 2. Skills for Working Life. 3. The DES documents.

(An example of an evaluation sheet is found on the next page.)
EVALUATION SHEET FOR THE SECONDARY SCHOOL SELF-EVALUATION
TITLE: THE SCHOOL'S AIMS

This is one of three different evaluation sheets. The titles of the three evaluation sheets are as follows:

ELEMENT ........................................

(Instructions Please write the first element here and complete the evaluation sheet by ringing your responses on all the rating scales. Then take a second evaluation sheet and complete it for the second element and so on, until all four elements have been rated by you.)

EVALUATION SHEET FOR THE SECONDARY SCHOOL SELF-EVALUATION
TITLE: THE SCHOOL'S AIMS

ELEMENT ........................................

CONSTRUCTS RATING SCALE

This element -

1. responds to changes going on (does not respond in society YES! Yes yes? no? No NO! to changes...)

2. equips pupils to use language (does not equip effectively YES! Yes yes? no? No NO! pupils...)

3. equips pupils to use mathematics (does not equip effectively YES! Yes yes? no? No NO! pupils...)

4. enables pupils to develop (hinders pupils from moral sensitivity YES! Yes yes? no? No NO! developing...)

5. enables pupils to develop political (hinders pupils from understanding YES! Yes yes? no? No NO! developing...)

6. enables pupils to develop an understanding (hinders pupils of society YES! Yes yes? no? No NO! from.....)

7. provides a balance between practical and academic activities (an imbalance between...)

8. emphasises 'learning to learn' rather than (emphasises fact acquisition YES! Yes yes? no? No NO! acquisition)

9. operates a recognised policy relating to (no recognised discipline/control YES! Yes yes? no? No NO! policy)

10. provides a stable atmosphere (does not provide a stable..)
Now take four blank evaluation sheets entitled 'Skills for Working and Adult Life' and go through the above procedure.

Then complete the remaining four evaluation sheets entitled 'DES documents'.

At the end of this, please staple all twelve (3x4) evaluation sheets together into a booklet. The completion of these evaluation sheets is preparation for the all important deliberation to come.

Stage 2c. The completion by participants of an evaluation sheet for each element.

On 6th September 1982, sets of the three different types of evaluation sheets were distributed to all members of staff. Staff were asked to complete them by 15th September 1982 as the LEA had given permission for the school to close for a half day specifically to free staff for the next part of the evaluation. The half day closure was a significant gesture by the LEA. It enhanced the status of the curriculum evaluation exercise and was appreciated by the staff. At that meeting, all staff, except the Headmaster, were grouped into three faculties: 'Creative Arts' (7 teachers), 'Maths and Science' (8 teachers) and 'Humanities' (8 teachers). Each group had a chairperson and a scribe, designated by the Headteacher. On 14th September 1982 a set of discussion guidelines was issued to each member of staff. A summary of these guidelines is as follows.

1. Each teacher will have 12 completed evaluation sheets. It is obvious therefore that there will not be enough time to discuss everything that might be revealed by the completed
evaluation sheets. The aim is to identify particular strengths and weaknesses in the school in the areas in which effective work should be consolidated and those in which change should be considered.

2. It is suggested that the evaluation sheets are considered in the following order.

i. School aims - your main teaching subject yrs 1-3
   - your main teaching subject yrs 4-5 (exam)
   - your main teaching subject yrs 4-5 (non-exam)
   - your view of the school's curriculum as a whole

ii. Skills for working life
   - your main teaching subject yrs 1-3
   - your main teaching subject yrs 4-5 (exam)
   - your main teaching subject yrs 4-5 (non-exam)
   - your view of the school's curriculum as a whole

iii. DES documents
   - your main teaching subject yrs 1-3
   - your main teaching subject yrs 4-5 (exam)
   - your main teaching subject yrs 4-5 (non-exam)
   - your view of the school's curriculum as a whole

3. The deliberation.

   It is suggested that you start the deliberation by taking the first element and beginning with the first construct, ask a participant with a strongly positive response on that particular rating scale to discuss his or her perspectives with a participant with a strongly negative response on that same rating scale. Identifying those teachers with 'positive' and 'negative' views on the same area has been shown as a
useful way to start the deliberation; draw the other members of the group into the discussion as soon as is appropriate.

4. It is suggested that scribes have a separate sheet of paper for recording the discussion of each evaluation sheet. Each new sheet of paper should be headed with the name of the faculty and the evaluation sheet under examination.

(End of the guidelines.)

STAGE THREE: Deliberation by all participants based on the perspectives revealed by the booklet of completed evaluation sheets.

The deliberation lasted from 1.30pm to 4.45pm and used the procedure suggested above.

STAGE FOUR: Written summaries of deliberations

A full account of each faculty's deliberations were written up and submitted to the teachers involved. When it was agreed that the document contained a fair reflection of what was said, a paper was compiled and submitted to the School's staff as a whole. A separate paper was written by the Headteacher giving an account of his views of what had been reported.

As this was a review involving the whole school, the reports are long ones. Hence, the full, verbatim faculty reports and the Headteacher's report can be found in Appendix A. For the sake of clarity, only summaries of these reports are given here.

A summary of the main areas of concern identified during the review exercise
1. The school's curriculum was not sufficiently adapting to changes in society, especially in relation to youth unemployment.

2. Links between industry and the school were less than they should be.

3. The curriculum was not providing enough opportunities to develop appropriate skills for adult life, especially with reference to communicating with employers.

4. A lack of physical resources in some areas was hindering pupils in the development of skills in the use of machinery and other technological equipment.

5. The curriculum in the upper school was examination oriented and the needs of the 'non-examination' pupils were not adequately catered for, in some areas.

6. No integrated sex education programme was apparent.

7. Some teachers felt that the curriculum was too narrow.

8. Staff were aware of their lack of a view of the school's curriculum as a whole. Communication between subjects areas could be improved and knowledge about other departments ought to flow more freely.

A summary of the main strengths of the school's curriculum as identified during the review exercise

1. There was a sound careers education programme, especially the work experience scheme.

2. The social education programme was worthy of mention. This included interviewing techniques and participation in the
Young Enterprise Scheme.

3. The traffic education programme was a strong and relevant part of the school's curriculum.

4. Health education was well covered through child care, careers education, physical education, home economics, needlework, traffic education, woodwork and science.

5. The Record of Personal Experience Scheme encouraged less able pupils to develop and display personal qualities.

6. The introduction of Active Tutorial Work had proved worthwhile in developing social skills, as were the use of school visits, camping, holidays abroad, drama, concerts and so on.

7. Despite the examination orientation of the 4th and 5th year curriculum, 15 out of 40 periods in the 5th year and 12 periods in 40 in the 4th year were given over to personal and social education.

STAGE FIVE: An account of what actually happened in the institution arising from stage four.

1. All pupils in the 4th and 5th years now follow a broader curriculum embracing English, mathematics, Religious Education, science, physical education, careers education, history, geography, health education, social education, computer studies, traffic education and at least one creative arts subject.

2. Active Tutorial Work is to be continued.

3. The Record of Personal Experience Scheme is being made available to a wider range of pupils.
4. A foreign language course has been initiated for most 3rd year pupils.
5. Syllabuses and curriculum policy statements are now exchanged among departments. This should improve understanding of the curriculum as a whole.
6. There are now more discussions between teachers and governors on the school's curriculum.
7. Twice yearly, detailed discussion now take place between the Headteacher and the different departments concerning the matching of aims to the school's curriculum.
8. Invitations are now extended to heads of departments (and others) to attend meetings of other departments.
9. A review of the functions of the Curriculum Coordinating Committee has taken place and its terms of reference are more clearly defined.
10. The curriculum for 1983/4 has been discussed by the whole staff in the light of this review.

Comments arising from investigation three
The staff were invited to submit and, if they preferred, anonymous comments on the curriculum evaluation process. These are reported in full in Appendix B. A summary of their comments is included here.

A summary of teachers' comments on the curriculum evaluation process
There was general satisfaction with the review and its outcomes. The curriculum evaluation process was seen as providing an appropriate mechanism for examining the school's
curriculum and giving a formal opportunity for discussion across subject and departmental divisions. It was seen as facilitating an evaluation of the school's aims and encouraged a valuable exchange of views. This led to exposure of strengths and weaknesses in the school's curriculum, which, in turn, led to a greater awareness of the school's curriculum as a whole. During the deliberation the interdependence of the staff in the development of a viable whole school curriculum became obvious.

It was felt that a certain amount of apprehension was inevitable in any curriculum review. Although the curriculum evaluation process was seen by some as initially divisive, as it progressed the staff were brought closer together. The identification of strengths and weaknesses, not easily admitted in public, would influence the future quality of teaching. There were some arguments about the meanings of the terms used in the various stages of the curriculum evaluation process. This could have been avoided by clearer definition of terms early in the process. Those members of staff who joined the evaluation some time after the start found it difficult to understand what was expected of them. Much more time was needed for the deliberation.

The author's comments arising from investigation three

1. Staff commitment is necessary before such a curriculum evaluation exercise is possible. Support by the LEA is also needed.

2. An evaluation exercise is time-consuming. This exercise was
spread over fifteen months.

3. This evaluation exercise generated some insecurity and there was considerable apprehension at the beginning of the exercise. The role of the author was in question and who was to control the process needed clarification and negotiation before the evaluation exercise could start. Time is needed to develop trust.

4. Part of the success of this particular exercise was attributed to the 'curriculum awareness' of the staff. Without this, the headmaster thought such an exercise would have been difficult.

5. More time was needed in the deliberative stages.

6. Time must be spent on ensuring that all those involved understand the curriculum evaluation process. This is particularly important for those who are not actively involved from the beginning.

7. The curriculum evaluation process was generally welcomed. A detailed evaluation by the staff of this school of this curriculum evaluation process can be found in Appendix B.
INVESTIGATION FOUR

THE EVALUATION OF A PERSONAL AND SOCIAL EDUCATION COURSE

The secondary school at which this six week personal and social education course took place is a comprehensive secondary school on the outskirts of Plymouth. In 1980, there were 1700 pupils. In that year the school began to provide a series of identical six week programmes of personal and social education throughout the third year. On October 14th 1981, a lecturer in a college of higher education met the teacher responsible for personal and social education to discuss the possibility of using the proposed curriculum evaluation process to review the effectiveness of these six week courses in the third year. It was decided to begin the exercise by producing an evaluation sheet for these courses. As one of these courses was about to begin, it was agreed to use this course as a basis for eliciting the constructs for the evaluation sheets.

STAGE ONE: The identification of the issue and the elements
As already mentioned the issue for evaluation would be 'the six week course in personal and social education'. It was also agreed that the elements would be the six lessons which constituted the course.

STAGE TWO: The discovery of the various perspectives of those involved
Stage 2a. The identification of the constructs by which each element is to be evaluated
It was decided that the lecturer would attend as many as
possible of the six sessions and at the end of each session the lecturer and the teacher would discuss and list possible questions that could form the basis of the constructs to appear on the evaluation sheets. After the sixth lesson, a selection of these questions would be made for the ensuing review.

A sample of the questions follow.

a) Are the pupils involved?
b) Is the material relevant to the pupils?
c) Is pupil/pupil interaction fostered?
d) Are there opportunities to develop empathy?

The questions selected were turned into constructs as follows.

High pupil involvement ........ Low pupil involvement
Relevant to pupils' lives ...... Irrelevant to pupils' live
Fosters pupil/pupil interaction ...hinders pupil/pupil interaction
Develops empathy..... Does not develop empathy
and so on.

Stage 2b. The compilation and production of evaluation sheets.

An evaluation sheet was compiled (see next page.)
EVALUATION SHEET FOR THE PERSONAL AND SOCIAL EDUCATION COURSE

ELEMENT .................................

(Instructions please write 'LESSON ONE' here and then complete the evaluation sheet by ringing your responses on all the rating scales. When completed, take a second evaluation sheet and complete it for the second lesson and so on, until all six lessons have been rated by you.)

CONSTRUCTS RATING SCALE

This element -

<table>
<thead>
<tr>
<th></th>
<th>involved pupils</th>
<th>identified sensitive</th>
<th>provided a supportive, non-threatening</th>
<th>provided and stimulated</th>
<th>created new personal</th>
<th>allowed opportunity for</th>
<th>provided a language for</th>
<th>fostered teacher/pupil</th>
<th>develops trust between</th>
<th>revealed different</th>
<th>fosters patience</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>involved pupils</td>
<td>YES! Yes yes? no? No NO!</td>
<td>at a high level</td>
<td>involved pupils</td>
<td>at a low level</td>
<td>failed to identify sensitive areas</td>
<td>failed to provide...</td>
<td>did not ..</td>
<td>failed to ..</td>
<td>did not allow..</td>
<td>failed to foster..</td>
</tr>
<tr>
<td>2</td>
<td>identified sensitive areas</td>
<td>YES! Yes yes? no? No NO!</td>
<td>failed to identify sensitive areas</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>provided a supportive, non-threatening atmosphere</td>
<td>YES! Yes yes? no? No NO!</td>
<td>failed to provide...</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>provided and stimulated personal insight</td>
<td>YES! Yes yes? no? No NO!</td>
<td>failed to ..</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>created new personal experience</td>
<td>YES! Yes yes? no? No NO</td>
<td>failed to ..</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>allowed opportunity for self expression</td>
<td>YES! Yes yes? no? No NO</td>
<td>did not allow..</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>provided a language for self expression</td>
<td>YES! Yes yes? no? No NO</td>
<td>did not provide..</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>fostered teacher/pupil interaction</td>
<td>YES! Yes yes? no? No NO</td>
<td>failed to foster..</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>develops trust between pupils</td>
<td>YES! Yes yes? no? No NO</td>
<td>failed to develop...</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>revealed different perspectives</td>
<td>YES! Yes yes? no? No NO</td>
<td>did not reveal..</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>fosters patience</td>
<td>YES! Yes yes? no? No NO</td>
<td>(did not..)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

At the end of this, please staple all six evaluation sheets together into a booklet. The completion of these evaluation sheets is preparation for the all important discussion to come.
Stage 2c. The completion by participants of an evaluation sheet for each element and the resulting compilation of the booklet of evaluation sheets.

Before this stage could be started, the teacher was given promotion within his school and his responsibility for the personal and social education programmes passed to another member of staff. If he had continued in his previous role, he would have completed a booklet of evaluation sheets at the end of the next, and subsequent, six week personal and social education programmes. The evaluation sheets would then have been used as a basis for self-appraisal or discussion with the lecturer. Recommendations for changing the programmes might have emerged from the deliberations. The teacher had hoped to have involved other teachers in using the evaluation sheets.

Comments arising from Investigation number four
1. Both the lecturer and the teacher found the formulation of questions a useful stage in the eliciting of constructs.
2. The teacher expressed his appreciation of a structured form of evaluation. He felt that the formality this lent to the process, emphasised the serious necessity of curriculum review.
3. Evaluation can be threatening. In spite of the experience of the teacher, and a confident relationship with the pupils, he felt constrained by the presence of the lecturer in his classroom. In spite of the lecturer assuring the teacher that she had had a similar group of pupils in Croydon, and
that she understood the problems, the teacher said he felt constrained to keep to his teaching plans, whereas, in the absence of the lecturer, he might have allowed what he called 'more mental and physical wandering'. However, each found the other's perspectives helpful, often identifying areas that they might not have thought about themselves.

4. Clearly the role of an external agent in such a review process is a sensitive one. The teacher stressed, however, that a welcome parity to the situation was derived from both teacher and lecturer contributing to the choice of constructs.
INVESTIGATION FIVE

REVIEWING THE ORGANISATION OF THE UPPER JUNIORS
IN A PRIMARY SCHOOL

The Primary School in this investigation was built in 1978 as one of two primary schools serving a large new estate, on the outskirts of Plymouth. The school has three large, open plan teaching areas and is divided into infants, lower juniors and upper juniors. There is a separate nursery unit which is shared with the other Primary School on this estate. The number of children on the school roll has grown rapidly since the school opened and in September 1983/4, 17 teachers, including the Headteacher and her Deputy, were on the staff. The numbers are still increasing and more staff will be appointed. The school has a tradition of school based in-service and curriculum review, and is quite remarkable in the way the staff engage willingly and readily in deliberation relating to all aspects of the school’s life. To a large extent this must be attributed to the stimulating and supportive atmosphere created by the Headteacher and her Deputy.

The method of organising the Upper Junior curriculum was changed in September, 1982. The Headteacher and staff teaching the Upper Juniors wanted to review the current practice and make recommendations for September, 1983, when the number of children in the base would increase and there
would be four teachers rather than three. The Deputy Head had been involved in the base during the Autumn term while awaiting a further appointment. The organisation of the base consisted of each teacher being mainly responsible for a third of the children. Apart from mathematics, physical education and an art/craft skills circus, the rest of the children's work was related to a project which was the focus for everyone in the base. At the beginning of the week, each child was told the work which was expected of him or her. It was then up to individual children to organise their time; all work set was to be completed within the week.

Following a brief meeting at the end of the Autumn term, a college tutor met the Headteacher and her Deputy to discuss the curriculum evaluation process. The college tutor outlined the stages in the evaluation process and various issues for review were discussed. It was agreed that those involved in the review should be the Headteacher, the Deputy Headteacher, the new Head of Department and the other teachers in the Upper Junior base.

STAGE ONE The identification of the issue and the elements. After discussion with all the staff involved it was agreed that the issue would be

'The organisation of the Upper Junior base'

and the elements would be:

Language Area
Mathematics Area
Science Area
STAGE TWO  The discovery of the various perspectives of those involved

Stage 2a. The identification of the constructs by which each element was to be evaluated.

At the meeting at which the elements were identified, the teachers had been asked to begin thinking about the criteria they would use to judge the effectiveness of the various areas. At the next meeting, the criteria were put forward, discussed and a list made. Each criterion was then expressed as a bipolar construct and discussed to ensure shared meaning.

Stage 2b. The compilation and production of evaluation sheets.

The evaluation sheets were then compiled by the college tutor by arranging the bipolar constructs on either side of a rating scale. Booklets were then made up of an evaluation sheet for each element.

A booklet of evaluation sheets was delivered to each of the teachers involved, just before the Easter holidays. Each teacher agreed to complete the evaluation sheets during the holiday period.

The evaluation sheet is found on the next page.
EVALUATION SHEET FOR REVIEWING THE ORGANISATION OF
THE UPPER JUNIOR BASE

ELEMENT ..............................................

(Instructions Please write 'LANGUAGE AREA' here and then complete the evaluation sheet by ringing your responses on all the rating scales. When completed, take a second evaluation sheet and complete it for the 'MATHS AREA' and so on, until all six areas have been rated by you.)

<table>
<thead>
<tr>
<th>CONSTRUCTS</th>
<th>RATING SCALE</th>
</tr>
</thead>
<tbody>
<tr>
<td>This area -</td>
<td></td>
</tr>
<tr>
<td>1 is large enough for what the curriculum requires (is not ....)</td>
<td>YES! Yes yes? no? No NO!</td>
</tr>
<tr>
<td>2 is well sited within the base (is not...)</td>
<td>YES! Yes yes? no? No NO!</td>
</tr>
<tr>
<td>3 is arranged to the best advantage (is not...)</td>
<td>YES! Yes yes? no? No NO!</td>
</tr>
<tr>
<td>4 has sufficient electric points (has insufficient..)</td>
<td>YES! Yes yes? no? No NO!</td>
</tr>
<tr>
<td>5 has sufficient equipment (has insufficient..)</td>
<td>YES! Yes yes? no? No NO!</td>
</tr>
<tr>
<td>6 has sufficient books (has insufficient..)</td>
<td>YES! Yes yes? no? No NO!</td>
</tr>
<tr>
<td>7 has adequate non-book resources (has inadequate..)</td>
<td>YES! Yes yes? no? No NO!</td>
</tr>
<tr>
<td>8 resources that are easily available (are not easily..)</td>
<td>YES! Yes yes? no? No NO!</td>
</tr>
<tr>
<td>9 has adequate storage facilities (has inadequate..)</td>
<td>YES! Yes yes? no? No NO!</td>
</tr>
<tr>
<td>10 has a storage arrangement which encourages the return of equipment (does not..)</td>
<td>YES! Yes yes? no? No NO!</td>
</tr>
<tr>
<td>11 has adequate furniture (does not...)</td>
<td>YES! Yes yes? no? No NO!</td>
</tr>
<tr>
<td>12 has supervision problems (does not..)</td>
<td>YES! Yes yes? no? No NO!</td>
</tr>
</tbody>
</table>

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At the end of this, please staple all six evaluation sheets together into a booklet. The completion of these evaluation sheets is preparation for the all important discussion to come.

Stage 2c. The completion by participants of an evaluation sheet for each element

The evaluation sheets were completed by ringing the response on the rating scale that was seen as most appropriate for that element in terms of that particular construct.

STAGE THREE The deliberation by all participants, based on the perspectives revealed by the completed evaluation sheets.

The deliberation commenced early in the summer term. The Headteacher had arranged cover for herself, the Deputy Headteacher and the Upper Junior teaching staff for two and a half days. The group arranged to meet at the nearby College of Higher Education so that the deliberation based on the completed evaluation sheets could take place undisturbed.

The deliberation was started by selecting the first element and beginning with the first construct. The Headteacher summarised the range of responses and recorded these on her evaluation sheet. This gave an impression of the extent of agreement or disagreement and whether feelings tended to be positive or negative. The deliberation proceeded from that
point. The deliberation was continued by considering responses to the next construct on the evaluation sheet and so on until all constructs on all the evaluation sheets had been considered. Comprehensive notes on the deliberation were taken by both the Headteacher and the College Tutor, special notice being taken of any problems, questions and recommendations identified.

STAGE FOUR The written summary of the deliberation. At the end of each deliberation session, the college tutor collected her own and the headteacher's notes, and wrote out a summary of the deliberation with special reference to the problems, questions and recommendations that had been identified. This was circulated to all members of the group, for comments and amendments, before the final draft was produced.

Summary of deliberation

Language area

There was general dissatisfaction with the language area. It had been designated as the language area because the language resources were there, but the children used it as an extension of project work, rather than for language work. The need for redesignating areas was discussed, especially in relation to the base having to accommodate 4 groups, and not 3, in the following year.

Recommendation

To consider the reorganisation of the base into two teams
of staff and children, with a language area and maths area each, and a shared central resource area.

**Mathematics area.**

There was some discontent with this area. It was felt that the storage facilities were adequate but difficult for the children to reach. It was thought that the Maths area should stimulate learning through its wall and table displays. It was noted that, in the infant department, the responsibility for wall displays was shared among the teachers. Concern was expressed about the lack of fiction books relating to mathematics. If the reorganisation recommended under Language area took place, there would be a need to consider the space storage and resource implications of two areas for mathematics.

**Recommendations.**

1) To give to individual teachers specific responsibilities for wall and table displays related to specific areas.

2) To look at fire door exit spaces to see if these could be roofed and used to increase available floor space.

**Science area.**

Space, storage and supervision were all problems in the science area. Four children was the maximum number that could be accommodated and the supervision necessary led to a large number of other children being unattended. These factors led to an under-use of the facilities. The possibility of more
science work, in particular recording and writing up, being done away from the science area was considered. There were other sinks in the base that could be used. There was general agreement that, although some science work must be set up in the science area, most could be done elsewhere. Frequently used equipment could be kept out of the science area. There was a need to check on the amount of science equipment available, especially if the base was to be divided into two. There was also a problem with younger children coming into the bases to borrow science equipment. They could not read the labels or reach the equipment to collect or return it, hence they demanded the attention of the Upper Junior Staff.

Recommendations
1) To check on the amount of equipment for September.
2) To store and display frequently used science equipment and books out of science area.
3) To remind all teachers of the School's policy regarding the collection of resources before lessons.

Project area.
There was a fairly positive attitude to the project area, but concern was expressed that there was no real place for displaying and storing project materials, especially tapes, slides and other non-book resources. There was a need for stimulating material on all wall display boards. This caused problems at the beginning of term. The possibility of using work from the previous term was discussed. It was felt that
if the children were divided into two groups and engaged in two different projects, this would make a better use of the limited resources. There was a great need to build up resources, and as money was limited, great care must be taken in selecting them. It was generally felt that adequate use was made of outside agencies, although the museum and library resources came two weeks after the start of the term. The power supply did not allow much flexibility in the placing of equipment. The current organisation of the project area led to a great deal of teacher and pupil movement. It was felt that dividing the base into two might reduce this movement.

Recommendations

1) The School's Special Project, in the financial year beginning April 1984, should be to build up project resources.

2) To set up a central resource area to facilitate storage, including somewhere to hang up the slides.

3) To purchase multipoints to extend availability of power supply.

4) To consider the use of trays for storing the children's books and pencils.

Art and Craft area.

This was considered an appropriately resourced area, although supervision and its use for other purposes was a problem. As the general direction of thinking seemed to indicate a change in the use of the art/craft area in September, it was not discussed further, although the
question as to where pottery would be done in a reorganised base was noted.

**Library area.**

It was generally felt that the library was not in the best place and was not large enough in size or stock. A discussion took place as to what children needed in a library area. The following needs were noted - a place to sit and read, a place to retrieve information from a wide range of book sources and a quiet place to work. It was agreed that the library should not be used for teaching groups. The lack of money to adequately stock the library with both fiction and non-fiction was noted. Concern was expressed over the lack of adequate stock control and the loss of books. The need for a suitable classification system and the training of children in library skills was discussed.

**Recommendations.**

1) To move the library area and to create the right atmosphere for quiet reading.

2) To build up the stock of books as time and money allows, encouraging teachers to submit lists of tried and tested books for purchase.

3) To consider the use of carrels for creating study areas.

4) To have a Staff discussion on classification and to decide on a system to be used throughout the school.

5) To teach library skills systematically and from an early age.
6) To lay down a structure for dispersing new books.

7) To have an annual check on non-fiction books.

8) To have a termly check on reading books.

STAGE FIVE An account of what actually happened in the institution arising from stage 4

At the end of the Summer term 1983, the staff involved in the evaluation met to discuss and plan the organisation of the Upper Juniors for the following year. On 27th September 1983, the staff involved in the evaluation met to assess which of the recommendations had been put into practice, and which still needed to be considered. The College tutor who advised on the curriculum evaluation process was invited to attend the meeting. The resulting discussion is summarised under these headings.

Major changes

Minor changes

Recommendations still to be considered.

Major Changes

1) The Upper Juniors had been organised into 2 groups of children (1 of 3rd years and 1 of 4th years) with 2 teachers responsible for each group.

2) The room organisation had been changed. The 3rd year group and the 4th year group, each has

1 large language/art and craft/science room

1 smaller maths room

The two groups share a library and a resource area.

3) The two previous changes had led to a reduction in
movement (by both teachers and children). This had been an area of concern highlighted by the evaluation.

4) More time has been made for listening to children read, by 'doubling up' for music, drama and P.E.

5) There have been several changes in teaching style, for example, there is more direct teaching in maths, more quiet input time and opportunities made for creative writing.

6) An hour on Friday has been designated to catch up on quiet reading time. (This did not seem to be working too well.)

7) It had been school policy this year that money should be allocated to buy books for project work.

Minor Changes

1) Work has begun on improving the library facilities. Teachers have started to submit lists of tried and tested books for purchase.

2) Some more resources have been purchased, for example, a filing cabinet and a cassette recorder.

3) The storage of children's belongings has been improved by asking each of them to bring a bag to school, rather than using the trays which were thought to be more useful for storing school equipment.

4) Pottery was now done in the dining room.

Recommendations still to be considered

1) Work still needs to be done on reorganising and cataloguing the library. (The computer might be useful here)
Teachers need to be given time release to see and choose books. There needs to be a full staff discussion with regard to teaching library skills.

2) A more systematic approach to ordering books and equipment is still needed.

3) Various resources that would be beneficial in the bases have been identified, but the money to buy them is a problem.

4) The seating of children is a problem. There is little room for flexibility and there are still 20 children to come.

5) The division of responsibility for specific display areas among the teachers is still to be implemented.

6) Collecting of science equipment by children from other departments is still a problem. There needs to be a definite school policy. Both teacher and pupil science books need to be properly organised and displayed.

7) More parents are needed to help with cookery and an in service course provided for them.

Comments arising from investigation five.

All the teachers involved in this review were asked to put down in writing their impressions of the evaluation process. The following is a summary of their written responses. The evaluation was found to be demanding in time and energy, but was enjoyable and sharpened thinking. The size of the group was seen as important; it was small enough to give everyone the opportunity to express their opinions. The role of the college tutor was appreciated, especially for chairing the review, producing minutes on each meeting speedily and
duplicating evaluation sheets, summaries of the deliberation, and so on. Having a structure for the review was seen as particularly helpful as the teachers' previous experience of staff discussions was that they could easily stray from the point. It was felt that at certain times the College Tutor could have been a firmer chair-person and drawn certain stages of the deliberation to a speedier conclusion.

Deciding on the criteria from which the constructs were derived was seen as a particularly important stage in the review. The teachers felt that although they were constantly involved in informal evaluation of their work, they rarely thought systematically about the criteria that they actually used to judge the worthwhileness of aspects of their teaching and teaching environment. The necessity to explore their own attitudes was demanding but valuable. Being made aware of other teachers' perspectives was especially appreciated, as was the opportunity to present their own views. It was felt that the opportunity for both were limited in a 'normal' school day. It was generally felt by the participants that they had been honest about their feelings, although it was acknowledged that complete openness in expression is unlikely with any group of people who must continue to work with each other. The in-service time allowed by the LEA was seen as significant, as working within school hours was less tiring than after a day's teaching. The LEA's recognition of the value of the review was also appreciated. A comfortable room away from school was also commented upon favourably. (The early meetings had taken place in the school and
had suffered from various interruptions and Staff being called away). General satisfaction was expressed that changes in the organisation had actually followed the review, and that recommendations not yet acted upon were being currently considered. The main disadvantages of the process were seen as the demand on teacher time and energy, and the disruption to the children. However, it was acknowledged that school self-evaluation is always time-consuming and demanding, and that the disruption to the children had to be balanced against the advantages of any changes resulting from the review.

The external agent's comments

The College Tutor was interviewed after the review and the following is a summary of her comments. The review was aided by having sufficient time at the beginning to describe the curriculum evaluation process in full, and to answer any questions at that point. The fact that the school had regular discussions concerning curriculum issues was also an advantage, as the teachers did not seem too threatened by an evaluation which related to their own practice. The size of the group seemed ideal; it included all those most involved with the Upper Junior Base but was small enough to permit everyone to participate freely. The tutor agreed in retrospect that she could have sometimes been a firmer chair-person. She had been conscious that her role was to be a facilitating one and had been cautious not to impose her own views, nor shorten the discussion. She felt that her
provision of minutes, evaluation sheets, and so on, had considerably eased the pressure on the schools resources. The tutor had been impressed by the way in which recommendations for change had emerged during the deliberation and even more impressed by the actual changes that had taken place, and were being planned as a result of the review.
INVESTIGATION NUMBER SIX
AN EVALUATION OF A CORNISH SECONDARY SCHOOL'S RESIDENTIAL WEEKEND IN-SERVICE COURSE

On 6th May, 1982, the Senior County Inspector of Schools sent a letter to all secondary Headteachers in one County offering, to one school, the use of a Residential Teachers' Centre for evaluating the whole, or part of, that school's curriculum. The weekend available was from Friday, 26th November to Sunday, 28th November, 1982.

Replies to this letter were sought within a month, giving the names of the staff willing to commit themselves, and how the weekend might be fitted into the school's long term plan for curriculum development. Also, it was to be a condition of accepting this offer, that the school was willing to allow an 'observer' to attend. The observer was to report 'on the value of a weekend residential course as a method' so that a decision might be taken whether to offer this facility in future years.

The author, who was invited to be the observer in this instance, saw this as an interesting opportunity for investigating further the use of his curriculum evaluation process. The range of perspectives on this In-service weekend promised to be varied and wide, as about 60 people were expected to attend, including present and past teaching staff, primary Headteachers of 'feeder' schools, governors, parents and past pupils. It was recognised, however, that the
limited time available with the participants would be a considerable constraint.

STAGE ONE The identification of the issue and the elements. In discussing the issue for review with the Senior County Inspector for Schools and the Headteacher concerned, it soon became evident that although the issue was clearly 'this course as an in-service method', it was difficult to establish a list of elements which were both representative and at the same time would come within the same range of convenience. As the time available for this review was limited, it was decided, therefore, to make this an atypical case, by nominating the issue as the only element and expressing some of the ideas that had been suggested as elements in the form of constructs.

STAGE TWO The discovery of the various perspectives of those involved.

Stage 2a The identification of the constructs by which the element was to be evaluated.

On Thursday, 4th November 1982, the author had a meeting with a group of the participants. (The varied nature of the participants' occupations made it difficult for them all to attend.) The author outlined the process and explained that, in this case, the constructs would consist of the participants' expectations of the course. From the questioning the author received, it became obvious that some of the teachers were seeing the evaluation sheet as the only source of data for the review. So care was taken to
emphasise that the completed evaluation sheets would be used as the basis for the deliberation to follow. The deliberation would provide the main source of data for the report, rather than the data from the evaluation sheets. After further questions concerning the process had been answered, the participants were invited to write down their expectations for the weekend. These were collected by the author and the expectations expressed as constructs, as the following example shows.

Expectation: 'I hope the lecture inputs are relevant'.
Construct: lecture inputs relevant/lecture inputs irrelevant.

Stage 2b the compilation of the evaluation sheets.
In reading through the list of expectations it was found that some expectations only applied to certain groups of participants. It was therefore decided to include some constructs on the evaluation sheet which were directed towards certain participants only. It was made clear on the evaluation sheet which items were specific to certain groups. The author was allowed thirty minutes with the participants on the first evening of the course to go through the draft evaluation sheet with them, to discuss any misunderstandings and to make modifications and additions, where necessary. The redrafted sheet was then duplicated in sufficient numbers for it to be completed by the participants on the last day of the course.

As the evaluation sheet included 29 constructs, the full evaluation sheet is not repeated here. Instead, 6 of the 29
constructs are given as examples.

1. Residential nature of the course an advantage/ residential nature of the course a disadvantage.

2. Sufficient time for discussion/ insufficient time for discussion.

3. Balance between programmed and free time satisfactory/ balance between programmed and free time unsatisfactory

4. Speakers stimulating/ speakers boring

5. Adequate time allocated to interdepartmental discussion/ inadequate time given to interdepartmental discussion (This construct was addressed to those on the staff of the school)

6. Adequate time allocated to discussion within departments/ inadequate time allocated to discussion within departments. (This construct was addressed to those on the staff of the school)

Stage 2c The completion by participants of the evaluation sheet

The evaluation sheet was completed in the same way as in the other investigations.

STAGE THREE Deliberation by all participants based on the perspectives revealed by the completed evaluation sheets

It had become apparent during the initial meeting with the staff and during the weekend that there were very mixed feelings with regard to the use of a whole weekend for this sort of course. Also, although the participants were interested in evaluating the curriculum of their own school, they seemed less concerned with reviewing the residential weekend as an in-service method for the benefit of the L.E.A. The headteacher, although not unsympathetic, had reacted by curtailing the already limited time to be spent on the evaluation. In the original proposal, a meeting was
planned to take place between the author and the headteacher, in order to plan the deliberation. Unfortunately the demands of time did not allow this to take place, and when the author arrived at the school on 6th January 1983, he found the school hall set out in a formal way. As a result, the deliberation was carried out in a more formal style and with a much larger group than was desirable.

As a result of the large number of constructs to be considered in the limited time available, it was decided to represent the responses in the following way; an example will illustrate this.

<table>
<thead>
<tr>
<th>Construct</th>
<th>Responses by all participants on the rating scale</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>YES     yes yes? no? no NO</td>
</tr>
</tbody>
</table>

Relevant lecture 8  18  12  3  4  1  Irrelevant lecture inputs

This information was provided to give some impression of the range of perspectives for each construct.

At the deliberation each participant had this information available and their own completed evaluation sheet.

The deliberation was started by taking the first construct on the evaluation sheet and asking for those representing the shades of opinion across the rating scale, to put forward their view. General discussion then took place.

Unfortunately, due to the limited time available, it was not possible to deal with all the constructs; a selection had to be made. During the deliberation, notes were taken by the two school secretaries, the headteacher and the author.
STAGE FOUR Written summary of the deliberation.

A summary of the deliberation, including recommendations for change, was compiled from the four sets of notes. This was sent to the school for comments and amendments before the final draft was written.

Summary of the deliberation.

a) The use of a weekend

A single weekend In-service course was seen as insufficient in itself. It must be part of an ongoing programme. Some felt that the course took too much of the weekend. It was difficult to teach the following week without the normal ‘mental preparation time’. Friday was seen as being particularly difficult. There was a need for something ‘to encourage attendance and provide a shared experience’, but not ‘too much of a strain to listen to’. Perhaps Friday evening should consist of a short, stimulating input from 8 to 8.30pm, followed by informal discussion time. This was seen by most as better than starting on Saturday. If Sunday was to be used, it might be better spent in further discussion and feedback from the different groups. The timing of such a course was also discussed. The weekend of a working week, just after half-term, was suggested.

b) The advantages of a residential course

Time spent on formal and informal discussion was seen as important. Hence, a course like this should be a residential one. Not only did a residential course provide
time for dialogue, but attention was concentrated by removing participants from domestic concerns.

c) **The balance between programmed and free time**

There was a range of opinion as to the rightness of this balance. Most had appreciated the programmed discussion sessions, although the discussions that took place in free time were seen as more valuable. Friday night should not be heavily programmed.

d) **Opportunities for getting to know each other**

As this was a 'single school' course, most participants already knew each other, but name tags would have been useful since governors, parents and primary headteachers were also present. The course provided welcome time for an interchange of ideas and permitted participants to be more outspoken than in staff meetings.

e) **Discussion sessions**

The discussion sessions were seen as useful. There was some feeling that even more would have been achieved in the discussions if they had been more structured. In particular, more 'feedback' sessions were recommended. Sunday, in particular, was seen as a time for plenary sessions. Items for action need to be even more clearly identified, and made available. Concrete suggestions for change need to be made and a programme devised for bringing these about.

f) **Understanding the School**

Governors, parents and primary headteachers felt that they had a better understanding of the school as a result of the
weekend course. The teachers said they understood each other better.

g) Lecture inputs
Participants' attitudes to the lecture inputs varied according to the speaker. Even greater care must be taken with the Friday lecture(s) and the replacement of the Sunday lectures by plenary sessions was recommended. Lectures should, it was felt, play only a small part in such a course.

h) Primary Headteachers
The primary headteachers found it valuable to get to know the School's staff. This would help with future primary/secondary liaison. However, in general, the internal affairs of the School that were discussed were of little relevance to them. It was felt that there should have been time for the primary headteachers to get together as a group.

i) Implementation of suggestions arising from discussions
A concern was expressed that the suggestions and recommendations resulting from such a course should be seen to be implemented.

j) Pre-course planning
'Key issues' must be identified, well in advance, by as many participants as possible.

k) The room facilities for lectures and discussion groups
These were generally felt to be satisfactory. But the domestic arrangements, in particular, the night heating, bar facilities and choice of food could be improved.
STAGE FIVE An account of what happened arising from Stage 4.
1. The evaluation report of the weekend In-service Course was considered by the Senior Inspector and some of his team and it was decided to offer the facility in subsequent years.
2. Guidelines arising from the evaluation were written for future planners of similar courses. These were as follows:
   a) School review is a long process and a residential weekend can play a small, but valuable part in that process.
   b) Pre-course planning is of crucial importance. Although small committees may get things done more quickly, wide consultation and participation in decision making are important.
   c) The opportunity for discussion is of particular significance, whether programmed or informal. It is important that the programmed discussion time should be structured and the focus identified, so that participants can select which group they join.
   d) Plenary sessions should be organised so that the discussion groups can give their ideas to the whole group.
   e) The number of lecture inputs should be limited and speakers should be known to be stimulating and interesting.
   f) An appropriate balance should be created between programmed and free time.
   g) While pre-planning is important, the programme should be flexible enough to allow individuals to alter the focus of
attention, explore new questions that have been raised and join different groups.

3. Changes to the domestic arrangements have been made in the residential centre. The heating has been improved and more choice given with regard to food and drink, both at meals and at other times.

Author's comments arising from investigation number six

As noted at stage one in this investigation, this was an atypical case in that only one element was considered. However, this investigation has been included because the process did permit the exploration of the various perspectives of those involved, and the weaknesses and strengths of one weekend In-service Course were identified and recommendations made.

Changes have taken place to make the centre more comfortable and guidelines have been produced for future courses. The investigation also highlighted the need for time, especially at the planning, explanatory and deliberative stages. Group size is also of significance and where large numbers of participants are involved, smaller groups, especially at the deliberative stage, are advisable.
INVESTIGATION SEVEN
TWO TEACHERS EVALUATING THEIR OWN, AND EACH OTHER'S TEACHING

In this investigation the proposed curriculum evaluation process is tested by two teachers in a Cornish Secondary school. The teachers had been involved in the planning of a two year Personal and Social Education course for fourth and fifth years. This course consisted of ten units each lasting half a term. Four teachers were involved in teaching this course; two of them agreed to take part in this investigation. The two teachers agreed to assist each other in evaluating their teaching and chose as the focus of the evaluation two units of the Personal and Social Education course for which they were individually responsible. After some discussion between the author and the two teachers it was agreed that a short pilot study would be carried out. This would give an introduction to the main stages in the process and assist in deciding whether to proceed with a larger investigation. The pilot study consisted of each teacher evaluating three of their own and three of the other's lessons as well as employing all the stages in the proposed curriculum evaluation process. After the pilot study had been completed, it was decided to proceed to the main investigation.

STAGE ONE The identification of the issue and the elements
Each teacher selected a unit in the Personal and Social Education course for which they were personally responsible.
Teacher one selected unit one 'Who am I?'; teacher two chose unit five 'Discrimination'.

In both cases the elements were to be the six lessons that composed the units.

Stage Two The discovery of the various perspectives of those involved.

Stage 2a. The identification of the constructs by which each element was to be evaluated.

Each teacher wrote down the aims of their units. These aims were then expressed as constructs. For example, one of teacher one's aims was 'to encourage the development of self esteem' and it was expressed in construct form as 'Encouraged the development of self esteem did not encourage the development of self esteem'.

Stage 2b. The compilation and production of evaluation sheets

An evaluation sheet was compiled by teacher one and another evaluation sheet was compiled by teacher two (see the next two pages).
EVALUATION SHEET FOR EVALUATING TEACHER ONE’S PERSONAL AND SOCIAL EDUCATION UNIT ON ‘WHO AM I?’

ELEMENT ........................................

( Instructions please write ‘LESSON ONE’ here and then complete the evaluation sheet by ringing your responses on all the rating scales. When completed, take a second evaluation sheet and complete it for the second lesson and so on, until all six lessons have been rated by you.)

CONSTRUCTS RATING SCALE

This element -

1 encouraged interaction between those involved (discouraged ...)
   YES! Yes yes? no? NO NO!

2 provided opportunities for the development of self esteem (failed to...)
   YES! Yes yes? no? NO NO!

3 enabled pupils to develop their own thoughts (did not....)
   YES! Yes yes? no? NO NO!

4 encouraged pupils to listen to others (discouraged..)
   YES! Yes yes? no? NO NO!

5 enabled pupils to express their own opinions (did not...)
   YES! Yes yes? no? NO NO!

6 encouraged a self awareness (discouraged..)
   YES! Yes yes? no? NO NO!

7 encouraged an awareness of relationships (discouraged..)
   YES! Yes yes? no? NO NO!

8 provided a biological and sociological perspective of Man (failed to..)
   YES! Yes yes? no? NO NO!

9 encouraged an awareness of the uniqueness of each person (discouraged..)
   YES! Yes yes? no? NO NO!

10 provided for reinforcement and expansion of knowledge (failed to...)
    YES! Yes yes? no? NO NO!
EVALUATION SHEET FOR EVALUATING TEACHER TWO'S PERSONAL AND SOCIAL EDUCATION UNIT ON 'DISCRIMINATION'

ELEMENT ........................................

(Instructions Please write 'LESSON ONE' here and then complete the evaluation sheet by ringing your responses on all the rating scales. When completed, take a second evaluation sheet and complete it for the second lesson and so on, until all six lessons have been rated by you.)

<table>
<thead>
<tr>
<th>CONSTRUCTS</th>
<th>RATING SCALE</th>
</tr>
</thead>
<tbody>
<tr>
<td>This element -</td>
<td>(failed to..)</td>
</tr>
<tr>
<td>1 succeeded in examining the factors which cause barriers between people YES! Yes yes? no? No NO!</td>
<td></td>
</tr>
<tr>
<td>2 clearly provided the meaning of discrimination YES! Yes yes? no? No NO!</td>
<td></td>
</tr>
<tr>
<td>3 clearly explained what prejudice is YES! Yes yes? no? No NO! (did not....)</td>
<td></td>
</tr>
<tr>
<td>4 examined different types of prejudice YES! Yes yes? no? No NO! (failed to..)</td>
<td></td>
</tr>
<tr>
<td>5 developed skills of communication YES! Yes yes? no? No NO (failed to..)</td>
<td></td>
</tr>
<tr>
<td>6 encouraged literacy skills YES! Yes yes? no? No NO (failed to..)</td>
<td></td>
</tr>
<tr>
<td>7 provided opportunities for the development of self-esteem YES! Yes yes? no? No NO (did not..)</td>
<td></td>
</tr>
<tr>
<td>8 enabled pupils to develop a moral sensitivity YES! Yes yes? no? No NO (did not..)</td>
<td></td>
</tr>
<tr>
<td>9 enabled pupils to develop tolerance YES! Yes yes? no? No NO (did not..)</td>
<td></td>
</tr>
<tr>
<td>10 provided opportunities to develop pupil's own thoughts and opinions YES! Yes yes? no? No NO (did not...)</td>
<td></td>
</tr>
</tbody>
</table>
Stage 2 c. The completion by participants of an evaluation sheet for each element and the resulting compilation of the booklet of evaluation sheets. As each element was to be evaluated by both teachers this entailed them sitting in on each other's six lessons and each filling in the appropriate evaluation sheet at the end. To ensure that they each understood the other's constructs these were discussed in detail, before the teaching of the units began.

STAGE THREE Deliberation by the participants based on the perspectives revealed by the completed evaluation sheets. Teacher one volunteered to have his unit evaluated first. The deliberation was started by comparing the evaluation sheets that both teachers had filled in, at the end of teacher one's first lesson. Similarities and differences were discussed and possible changes in content and style considered. When all teacher one's lessons had been discussed, the evaluation sheets based on teacher two's lessons became the subject of deliberation. Some of the deliberations took place at the end of each lesson, while those deliberations that needed longer periods were arranged at other times. All deliberations were tape-recorded.

STAGE FOUR Written summaries of the deliberation At the end of the deliberations both teachers listened to the taperecordings and wrote a summary of what was said.

a. A summary of the concerns identified in the deliberations on teacher one's lessons

1. Eliciting responses from pupils on sensitive areas was difficult. Teacher one often gave his own answers to
questions posed when none came from the pupils. Hence, lessons often lacked interaction.

2. There was a need to vary the teaching method used. What worked in one lesson did not necessarily work in another.

3. There was a concentration on content, rather than on the processes of communication and learning.

4. Questions needed restructuring to encourage pupils to develop confidence in answering competently.

5. The less confident pupils needed encouragement to speak openly.

6. Teacher one tended to revert to an authoritarian and prescriptive approach. This was quite contrary to the philosophy of the course.

7. The room needed to be arranged so as to encourage serious participation.

8. Initially teacher one felt strange and threatened by having teacher two in his classroom, but as confidence developed in each other's ability to appraise in an unthreatening way, so these feelings lessened.

b. A summary of the concerns identified in the deliberations based on teacher two's lessons

1. A single period is not an adequate length of time for a personal and social education lesson.

2. Assessing pupils' progress in personal and social education is a problematic area. In particular, it was difficult to set appropriate written work, and the lack of such written work added to the difficulties of judging the
quality of the teaching.

3. Again, it was confirmed that pupils needed encouragement to express their ideas on sensitive areas.

4. Pupils tended to be self-conscious when face with an informal seating arrangement.

5. As with teacher one, there was a concentration on content of lessons, rather than the processes of communication.

4. Personal and social education ought to be introduced earlier in the school's curriculum if the 4th and 5th years are to benefit.

5. Initially teacher two felt threatened and inhibited by the presence of teacher one in her classroom. She became very conscious of her movements and her speech. She also tended to hesitate before repeating herself, in case she bored teacher one. These feelings lessened as they gained confidence in each other.

STAGE FIVE An account of what happened arising out of stage four.

a. Changes to teacher one's unit on 'Who am I?'

1. Pupils are being encouraged to give examples and illustrations of issues covered, rather than have them provided solely by the teacher.

2. Communication skills and the development of confidence are being stressed, rather than the retention of factual knowledge.

3. The physical layout of the room has been altered to encourage participation.

4. Simple exercises from Active Tutorial Work such as
5. Pupils are encouraged to identify significant areas for study, rather than have them prescribed by the teacher.

b. Changes to teacher two's unit on 'Discrimination'
1. A wider variety of teaching styles are now adopted.
2. An attempt is made to judge the quality of the teaching and learning, using the pupils' level of involvement and participation in the lesson.
3. A double period is now used.

c. Changes to personal and social education within the school
1. There is a wider recognition of the importance of personal and social education in the school curriculum as a whole. It is often discussed in staff meetings.
2. A personal and social education course is being planned for years 1-3.
3. The pastoral system and its relationship to personal and social education is being reviewed in the school.
4. Teacher two was promoted to 'Year Head' and, as part of her role, has the responsibility for developing personal and social education in the school.

Comments on investigation number six

Teacher one was asked to comment on the curriculum evaluation process and the following is his response.

'The process was, of course, a very different technique. There was a lot of time and energy spent in the planning, observation and the deliberation that followed. There had been timetabling considerations to work out and the
psychological effects of having another teacher in the room can not be taken lightly. The function of the evaluation sheets is to provide the basis and structure for deliberation and if this is not understood, then there is a danger of seeing the evaluation sheets as an end in themselves. Deciding on the constructs was not a problem when the aims of the courses were established and even this in itself is a valuable exercise because it causes the teacher involved to scrutinise his lessons, something which might not happen all that often.

The teachers who do get involved with this process will have to be volunteers, for a teacher opens himself up to the observations, opinions, criticisms of another. The participants need to be openminded enough to accept this as positive feedback designed to enhance their performance in the class and not to see it as a threat. However, we would recommend the process to other teachers, not only because it provides a structure to self evaluation but because of the interaction it demands. Herein lies the process's inherent value for it is this contact, through discussion and dialogue, through listening to another's views and opinions, and through watching another professional at work that one learns so much. We would also recommend the taperecording of the deliberation. The whole exercise spurs one on to action. It is not easy to ignore the need for change when that need has been identified by two individuals rather than just one. Teaching in secondary schools is essentially a private occupation in that rarely do other adults visit the classroom when a lesson is going on. The process breaks through that barrier and must help to increase teacher confidence as well as pointing the way to improved performance.

Comments from the author

Although in this investigation the constructs were individually elicited, each teacher used the other's constructs when evaluating his or her lessons. After initial uncertainties about the process had been resolved in a pilot study, the two teachers began the curriculum evaluation process. However, the presence of another teacher in an evaluating role in their classroom caused considerable insecurity. The teachers felt exposed and inhibited, but as they began to use the evaluation sheets as a basis for the
deliberations, they found the process stimulating and supportive. A sort of excitement developed as they planned and presented their lessons and then prepared to compare their various perspectives.
INVESTIGATION EIGHT

THE REVIEW OF A COURSE FOR THOSE INVOLVED IN AN MSC'S YOUTH TRAINING SCHEME

In April 1984, a City and Guild's Course for those involved in the MSC's Youth Training Scheme was soon to be completed and, as it was the first of its kind in the institution concerned, the Course Leader wanted the Course evaluated. He decided to use the proposed curriculum evaluation process. At the beginning of the first session, a brief explanatory outline of the curriculum evaluation process was given to the twenty students on the course. The course leader was present throughout the whole evaluation process, which consisted of 2 sessions of 3 hours each.

STAGE ONE. The identification of the issue and the elements.

The issue was decided by the Course leader as 'This City and Guild's course'.

He also decided that the elements would be the topics covered during the course.

The elements

Y.T.S. design
Integration
Working with young people
Trainee centred learning
Assessment and review.
STAGE TWO The discovery of the various perspectives of those involved.

Stage 2a The identification of the constructs by which each element was to be evaluated.

The course participants were grouped in pairs and invited to design questions that could be used to judge the quality and value of the above five elements. They were asked to consider only those questions that could be asked of all the elements. Each pair of students then brought their questions to a plenary session. The questions were recorded, converted into constructs and then discussed and modified, if necessary, to ensure a shared meaning.

Stage 2b The compilation of the evaluation sheets

(An evaluation sheet is found on the next page.)
YTS EVALUATION

EVALUATION SHEET

Please put the course topic being evaluated here..............
Simply ring the appropriate responses for each topic and hand the
completed FIVE sheets (stapled together) to the Course Leader.

AGREED TOPICS: YTS Design, Integration, Working with young people,
Trainee-centred learning, Assessment and review.

1. This topic overlapped with other parts of the course (did not..)
   YES! Yes yes? no? No NO!

2. This topic fulfilled my expectations (did not..)
   YES! Yes yes? no? No NO!

3. The appropriate amount of time was given to this topic (was not..)
   YES! Yes yes? no? No NO!

4. This topic should have been covered more fully (should not...)
   YES! Yes yes? no? No NO!

5. This topic encouraged me to review critically my own practice (did not..)
   YES! Yes yes? no? No NO!

6. This topic has helped me to carry out my job more effectively (has not..)
   YES! Yes yes? no? No NO!

7. This topic made me more aware of young people’s needs (did not...)
   YES! Yes yes? no? No NO!

8. This topic helped my personal development as a YTS trainer (did not..)
   YES! Yes yes? no? No NO!

9. I now have a clearer understanding of this topic (do not..)
   YES! Yes yes? no? No NO!

10. The standard of tutoring was satisfactory on this topic (was not..)
    YES! Yes yes? no? No NO!

11. This topic was necessary (was not..)
    YES! Yes yes? no? No NO!

12. I have improved my teaching methods as a result of this topic (have not..)
    YES! Yes yes? no? No NO!

13. I got enough guidance on assignments associated with this topic (did not..)
    YES! Yes yes? no? No NO!
Stage 2c The completion by the participants of an evaluation sheet for each element.

The evaluation sheets were completed by ringing the response on the rating scale that was seen as most appropriate for the element in terms of that particular construct.

STAGE THREE Deliberation by the participants based on the perspectives revealed by the completed evaluation sheets.

At the second session, the participants were grouped into pairs and asked to look through their evaluation sheets together, noting the similarities and differences, and their possible significance. They were then asked to identify and record -

the strengths of the course,
the weaknesses of the course, and
any recommendations for change in the course.
They were also invited to suggest short courses that might supplement the main course. The pairs then met with the Course Leader for a plenary session, at which the main points arising were discussed. At the end of the session, the notes were handed to the author.

STAGE FOUR Written summaries of the deliberation.
The notes written by each pair of participants during the deliberation were collated and a written summary returned to the course leader.

The summary of the deliberations is presented under the four headings that were given to the course members.
Strengths of this course
It was felt that the sessions which dealt with
- the YTS within a socio-political context,
- the definition of YTS objectives
and
- the variety of YTS schemes
had been useful. The sessions on working with young people had been generally well received. The opportunity to meet other trainers and exchange ideas was particularly appreciated. Some course members felt that the course had helped develop their awareness of the issues involved, and had given them more confidence in what they were doing. The videos and information material available had been useful.

Weaknesses of this course
Several course members thought that the course had had a poor start and would have benefitted from greater structure in the initial sessions. There was a general feeling that the course could have been shorter, although more time spent on basic training methods would have been appreciated. It was felt that the issue of mixed ability groups had not been dealt with adequately. Some course members said that there could have been more instruction and less discussion. The assignment objectives should have been more clearly identified and the assignments should have been spread throughout the course, rather than crowded at the beginning. There was insufficient feedback on assignments and insufficient reference was made to the role of employers in
YTS schemes.

Recommendations for change in the course

Empathy between course members should be encouraged. More discussion with tutors should take place before assignments are submitted and more feedback should occur afterwards. The course for those involved in Mode A schemes should be different from those operating Mode B schemes. The course should be shortened although certain areas needed more emphasis; for example, teaching techniques, working with young people, mixed ability and remedial teaching. More time could be given to microteaching and more handouts should be provided. More outsiders should be involved in the course, such as the Careers office and MSC officers.

Short Courses

The following suggestions for short courses were offered.

1) Drug and solvent abuse
2) Alcohol abuse
3) Theft
4) Dealing with difficult trainees
5) Counselling and Guidance
6) Teaching techniques, including group work
7) General administration
8) Finance
9) Submission of YTS Schemes.
10) Certification
11) Advanced course in working with young people
STAGE FIVE  An account of what happened arising out of stage four

The Course Leader is planning the next course in light of these deliberations. It is also hoped to offer several one day courses in some of the areas indicated.

Author's comments arising from investigation eight

This evaluation went very well, with no apparent resistance to the process and a high level of involvement of all concerned. Factors contributing to this success include the following: The course leader had requested the evaluation and had discussed the process in detail with the author before the first session. He maintained an interested and supportive presence throughout. The course members had been informed that the evaluation would be taking place and that their comments would be listened to, and would influence the planning of next year's courses. A good relationship existed between the Course Leader and the course members. They were well used to discussing in small groups and in a plenary session. Course members said that they liked the structured nature of the curriculum evaluation process and had found the evaluation sheets useful in clarifying their perspectives. Deliberation in pairs had encouraged everyone to participate. The Course Leader felt that the process had encouraged the course members to think critically and systematically about the course, and to raise important issues for future planning.
INVESTIGATION NINE

THE EVALUATION OF NINE MATHEMATICS TOPICS
BY TEACHERS ON A MATHEMATICS DIPLOMA COURSE

In March 1984, the two tutors responsible for a Mathematics Diploma Course for serving teachers invited the students on the course to explore their attitudes to mathematics teaching topics, by using the proposed curriculum evaluation process. There were twenty teachers on the course, coming from a variety of schools; primary, secondary and special. Both course tutors wished to participate in the evaluation. A meeting was arranged to discuss the process in detail and plan the evaluation. Unfortunately, only one of the tutors was able to attend. The tutor who did attend agreed to explain the process to the other tutor and to the teachers on the Course.

STAGE ONE: The identification of the issue and the elements. The issue 'Mathematics teaching topics' had already been decided by the tutors. The elements were to be topics thought to be significant by the teachers. It was decided that the teachers would be asked for a selection of significant topics at the end of their next session. The topics selected were

Fractions,
Division,
Probability,
Percentages,
Factorisation,
Place value,
Subtraction,
Volume,
Velocity.

STAGE TWO: The discovery of the various perspectives of those involved.

Stage 2a The identification of the constructs by which the elements were to be evaluated.

The elements were written on the blackboard and the teachers were asked if they would like to add any more. They were then asked to think about the elements within the context of their own teaching and to suggest questions that they could ask of each topic. These questions were written on the blackboard, converted into constructs, discussed, and modified, if necessary, to ensure shared meanings.

b) The compilation of the evaluation sheets (An evaluation sheet is found on the next page.)
MATHEMATICS DIPLOMA EVALUATION

YOUR NAME..................................  
EVALUATION SHEET

Please put the mathematical topic being evaluated here................
It is suggested you have a particular class that you teach, in mind as you complete these sheets. Simply ring the appropriate responses for each topic and hand the completed NINE sheets (stapled together) to Richard.

AGREED TOPICS: Fractions, division, probability, percentages, factorization, place value, subtraction, volume, velocity.

1. This topic is explainable with use of concrete equipment  
   YES!  Yes yes? no? No NO!

2. This topic is a necessary life skill  
   YES!  Yes yes? no? No NO!

3. This topic is understood by me  
   YES!  Yes yes? no? No NO!

4. I know how to teach this topic to my class  
   YES!  Yes yes? no? No NO!

5. This topic will integrate with other areas of the whole school curriculum  
   YES!  Yes yes? no? No NO!

6. I really am keen to teach this topic  
   YES!  Yes yes? no? No NO!

7. This topic, once mastered, brings enjoyment to my pupils  
   YES!  Yes yes? no? No NO!

8. This topic has been preceded by the necessary groundwork  
   YES!  Yes yes? no? No NO!

9. This topic encourages discussion  
   YES!  Yes yes? no? No NO!

10. This topic is relevant to the pupils in my class  
    YES!  Yes yes? no? No NO!

11. This topic is necessary for mathematical development  
    YES!  Yes yes? no? No NO!

12. This topic has been allocated enough time by me  
    YES!  Yes yes? no? No NO!

13. There is some mathematical language specific to the learning of this topic  
    YES!  Yes yes? no? No NO!

14. My pupils find the learning of this topic difficult  
    YES!  Yes yes? no? No NO!

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c) The completion by the participants of an evaluation sheet for each element

It was at this stage in the process that problems became apparent. The evaluation sheets were handed out at the beginning of the session. Several of the teachers had been absent at the previous session and did not fully understand the terms and the procedure. Other teachers voiced their anxiety as to what would happen to their data. Their responses on the rating scales would be revealing in terms of their own teaching. In the discussion that followed, it became obvious that the purpose of evaluation was not clear to the second tutor nor to the teachers, who were regarding it as an external assessment of the ability to teach these mathematical topics. The session was ended by asking the teachers to take evaluation sheets away and complete them by themselves. It was planned to continue with the curriculum evaluation process after the Easter vacation. Only a few of the teachers returned with their completed evaluation sheets, and it was not possible to progress to the next stage.

Author's comments arising from investigation nine.

Although this investigation was a failure in carrying through the curriculum evaluation process, various important lessons were learned or reinforced.

1) Effective evaluation can only take place with the support of all those concerned. Because of the lack of opportunity to discuss the process fully with both tutors and all the teachers, there was considerable misunderstanding and mistrust.
Evaluation is threatening. The teachers involved were still being assessed by the tutors and, therefore, were cautious about being publically self-critical.

What is done with the data is an important concern. Some of the teachers saw the curriculum evaluation process as an external form assessing their ability to teach these topics.

When shared constructs are used it is essential that members are consistent in their attendance to ensure a shared understanding.

It can be useful to know something about the past history of a group. Immediately before the evaluation an attempt to run a course on self-exploration by another tutor had had difficulties. The group probably felt the evaluation was to be another such exercise.
CONCLUSIONS ARISING FROM INVESTIGATIONS ONE TO NINE

A. An analysis of the stages completed in each investigation
i. In all 9 investigations, the following stages in the proposed curriculum evaluation process were achieved:

   Stage 1
   Stage 2
   Stage 2(b)

ii. In investigations 1, 2, 3, 5, 6, 7, and 8, the following stages in the proposed curriculum evaluation process took place:

   Stage 2(c)
   Stage 3
   Stage 4

iii. In investigations 1, 3, 5, 6, and 7, all five stages in the proposed curriculum evaluation process were completed.

iv. Possible solutions in the form of recommendations arose out of the deliberations in investigation 1, 2, 3, 5, 6, 7, and 8. Some of these solutions were implemented in investigations 1, 3, 5, 6, and 7.

B. An analysis of participants' comments on the proposed curriculum evaluation process.

   a. There was a general feeling that being involved in the proposed curriculum evaluation process had been a worthwhile experience and warranted more time spent on it.

   b. The structured nature of the proposed process was appreciated.

   c. The eliciting of constructs was seen as a particularly significant stage, encouraging teachers to 'scrutinise their
lessons, something which might not happen all that often. (Investigation 7 p.194)

d. It was felt that the use of the rating scale

YES! Yes yes? no? No NO!

had encouraged participants to commit themselves and that this was valuable in discovering the different perspectives within a group.

e. The fact that everyone participating had been involved in the compilation and completion of evaluation sheets emphasised the value that was placed on everyone's perspectives.

f. The deliberation stage was rated highly by many of those participating in the investigations and it was felt that more time should be devoted to this stage.

g. The opportunity to express opinions, and to listen to those of others, was appreciated as it permitted 'an exchange of views and exposed problem areas.' (Appendix B)

h. The proposed curriculum evaluation process was seen by various participants to be threatening, at least in the early stages. As Teacher A in investigation 7 says 'a teacher opens himself up to the observations, opinions and criticisms of another. The participants need to be open-minded enough to accept this as positive feedback designed to enhance their performance in the class and not see it as a threat.' (Investigation 7 p.194)
Concern was expressed, in investigation 10, that participants might be reluctant to express all their views in the presence of course tutors or senior management.

The proposed curriculum evaluation process was seen by many teachers involved in the investigations as an appropriate mechanism for reviewing the school curriculum. Some teachers, for example, a geography teacher in Shepperton, as noted in investigation 2, have adopted the proposed process as part of their normal practice.

Recognition, by the two LEAs concerned in investigations 3 and 5, that time had to be allocated for such reviews was appreciated by the teachers involved. It was seen to add status and importance to the reviews.

C. Factors contributing to the success or failure of the proposed curriculum evaluation process

a. The commitment of the participants was an important factor in the proposed process being a satisfactory experience for those involved. Commitment of the Course Leader or Senior Management was particularly important.

b. Sufficient time must be spent on exploring the form and purpose at the beginning of the proposed curriculum evaluation process. This may have been an important factor contributing to the failure to complete investigation 9.

c. Inconsistent attendance by participants in investigation 9
led to problems in understanding the element and construct labels, and to a lack of understanding of the stages in the proposed process.

d. It is necessary to recognise that evaluation is a time-consuming process.

e. The role of the external agent is an important one. In this thesis the external agent has been 'the provider of the proposed curriculum evaluation process' (Giving advice on the various stages, recording minutes of meetings, compiling and printing evaluation sheets, and so on.) It has been important for the external agent to attempt to understand the sensitivities of the participants, and to maintain appropriate confidentiality.

f. The size of the group, especially at the deliberation stage, was important. Arrangements must be made for maximum participation and expression of perspectives. For example, in investigation 3, where the whole school staff was involved at the deliberation stage, faculty groupings were used to reduce group size. In investigation 8, an attempt was made to maximise participation by dividing the group into pairs, who then reported to a plenary session.

g. In investigation 2, the matter of all elements being within the range of convenience of the constructs presented a difficulty early in the review, and was solved by classifying the elements into 3 sets, each with its own list of constructs. This allowed for the long list of elements
identified by participants to be considered in the deliberation.

h. Investigation 6 was atypical in that there was only one element and a very long list of constructs. Nevertheless, this investigation did lead to an exploration of the participants' perspectives, and recommendations for change were made and carried out.
CHAPTER EIGHT
A POSSIBLE EXTENSION TO THE PROPOSED CURRICULUM EVALUATION
PROCESS AND ITS INVESTIGATION IN SIX SETTINGS

The results of the investigation of the proposed curriculum evaluation process described in chapter eight are, in the main, encouraging. However the question remains whether a statistical analysis in the process would add to its usefulness. Perhaps an examination of the mathematical relationships between constructs and elements might reveal more of an individual's perspectives and contribute to the deliberation.

Recent research, in particular that at the Centre for Human Learning at Brunel University, has led to developments in methods which can display relationships within a grid matrix. Focusing is such a method and is based on cluster analysis. Thomas (1974), the Director of the Centre for Human Learning, claims that cluster analysis is 'arguably preferable to factor analytic methods of grid analysis'. (Thomas, 1974, p. 3)

He writes

'the marginal advantages of the elaborate calculation in reducing the risk of error, are far outweighed by the immediacy of the simple calculation and skilled conversation easily uncovers and explores ambiguities which more elaborate mathematics might with difficulty have detected and structured'.

(Thomas, 1974, p. 4)

As already discussed (p. 94) clustering techniques attempt to solve the following problem.

'Given a sample of N objects or individuals, each of which is measured on each of p variables, devise a classification
scheme for grouping the objects into $g$ classes. The number of classes and the characteristics of the classes to be determined (Everitt, 1974, p.1)

When applied to the analysis of a repertory grid matrix, the chosen form of cluster analysis sorts the columns and rows so that the most similar columns and rows are grouped together. In other words, the analysis extracts groups or clusters of similar items and exposes a patterning of the original grid matrix data. Pope and Keen (1981) give a simplified explanation of the nature of this analysis. They give the following grid matrix as an example.

<table>
<thead>
<tr>
<th>Elements</th>
<th>E1</th>
<th>E2</th>
<th>E3</th>
<th>E4</th>
<th>E5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constructs:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C1</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>C2</td>
<td>2</td>
<td>5</td>
<td>3</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>C3</td>
<td>1</td>
<td>3</td>
<td>4</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>C4</td>
<td>2</td>
<td>4</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>C5</td>
<td>4</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>C6</td>
<td>2</td>
<td>1</td>
<td>5</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

The first step is to match up the columns of elements by calculating the differences in rating on each construct for each pair of columns (or elements) and summing these differences for each pair of elements. These sums of differences can be placed in matrix. (See top of next page.)
Matrix of sum of differences between element pairs.

By inspecting this matrix it is possible to isolate the pair of elements with the highest match, by looking for the smallest difference; in the above example, elements 2 and 4 have a summated difference of 1 and are therefore the two most closely related elements. These two elements can be placed side by side to indicate their close mathematical relationship. It is important to stress again that it must not be assumed that mathematical relationships necessarily imply psychological ones.

Further inspection of the matrix of the sum of the differences reveals the next highest match - 6 between E4 and E5. So, element 5 can be placed alongside E2 and E4 to
indicate its match with E4; although the level of match is a lower one than that between E2 and E4.

<table>
<thead>
<tr>
<th></th>
<th>E2</th>
<th>E4</th>
<th>E5</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>3</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>2</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>3</td>
<td>2</td>
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<td>4</td>
<td>4</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>5</td>
<td>2</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

This can continue until a 're-ordered' grid matrix has been achieved for all the elements.

<table>
<thead>
<tr>
<th>El</th>
<th>E1</th>
<th>E2</th>
<th>E4</th>
<th>E5</th>
<th>E3</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>C2</td>
<td>2</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>C3</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>C4</td>
<td>2</td>
<td>4</td>
<td>4</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>C5</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>5</td>
</tr>
</tbody>
</table>

**Element and construct 'tree' diagrams**

The various levels of match between the elements can be expressed as a dendrogram or 'tree'—this is called the element tree.

A construct tree is derived using a similar procedure. It is important to note that this is a simplified account of the mathematics actually involved in the FOCUS program. Further details are provided in Appendix C.
An example of a focused grid (Pope and Keen, 1981, p. 73)

A major advantage of the focused grid is that it retains the raw data but presents it in a re-ordered form with tree diagrams which display the patterns of responses within the grid. The print-out was specifically devised for use in feeding back the analysis of the grid to the subject with the minimum of complex mathematical computer output. The pattern of responses within the grid, as illustrated by the tree diagrams, forms the basis for deliberations.

An example of a focused grid used as feedback

Pope (1978) gives an interesting example of the use of focused grids in an educational setting. Pope (1978) used focused grids as feedback in her research into student-teachers' perspectives of teaching. [A short account of this
research is given in Pope and Keen (1981) Pope claims that the student-teachers in her research were able to understand the 'tree' form of feedback provided by the FOCUS computer program. This claim encouraged the author to examine her work, since his experience with the form of statistical feedback provided by INGRID was less than satisfactory.

During the feedback sessions in Pope's research, the focused grids were used as 'cognitive reflectors'. (Pope, 1978, p.115). Each student was asked to reflect on the element and construct trees in order to

a) note the high relationships between pairs or groups of elements.

b) consider personal reasons why particular pairs or groups within the total set may be alike or dissimilar.

c) note high relationships between pairs or groups of constructs.

d) consider the clusters formed to ascertain possible super-ordinate constructs.

Throughout the session the emphasis was on the student, rather than the researcher, providing the labelling or rationale for a cluster.

She claims, on the basis of her case studies, that 'the focused grids provided a rich source of data on the personal frames of reference of each student'. (Pope, 1978, p.250)

The focused grids provided an external record of the student teacher's attitudes to teaching which acted as a catalyst for further discussion. She also found that useful comparisons could be made between different students' data which allowed
the exploration of individual differences. Most of the students claimed that the content of the grids did represent their views of teaching and they found the focused grids, expressed as element and construct 'trees', interesting, readily understandable and usable. The printout of the element and construct trees was seen by one student as

'almost a way of formalising a lot of vague ideas which are floating about in your head... I think it is interesting to see them come out in that way because you tend not to see those sort of patterns in your mind' (Pope 1978,p.267)

Since her research with students-teachers, Pope (1981,p.127) has been involved in a number of review projects in which focusing programmes such as FOCUS, PEGASUS and SOCIOGGRID have been used. She claims that by providing an immediate analysis of an individual's grid the

'computer acts as a cognitive mirror in which the user sees himself. (Pope,1981,p.128)

The FOCUS microcomputer program was developed by Thomas and Williams (1972) and is based on a modified version of McQuitty's (1966) Hierarchical Linkage Analysis. The details of FOCUS can be found in appendix C.

Focusing grid data in this research

It was proposed, therefore, to extend the curriculum evaluation process by focusing the data obtained from the evaluation sheets and providing participants with statistical feedback in the form of element and construct trees. But, unfortunately, the FOCUS microcomputer program could not be
used on those microcomputers which were available to the author. Therefore a program had to be written which would serve the same purpose as FOCUS. The author found a colleague willing and able to write a program for this analysis and which could be used on a Research Machines 480Z microcomputer. This computer program is referred to as HLA throughout this thesis.

Investigating the value of the extended curriculum evaluation process

In order to assess the value of the focused feedback, it was decided to divide those involved in these set of investigations into two groups. One group would follow the extended process and the other group would use the process as used in the previous chapter, that is, without a statistical analysis of the grid data. (Participants would be assigned randomly to the groups.) To assess whether the statistical analysis added to the usefulness of the curriculum evaluation process, the deliberations of the two groups would be compared. In deciding how to compare deliberations the use of independent judges was rejected. Trial runs in making judgements on a scale of the usefulness of the deliberations proved very difficult. Several colleagues were asked to listen to tape-recordings of deliberations and to compare them. They were asked to rate each deliberation on a 1-5 scale for the identified strengths and the identified weaknesses of a course and for the recommendations for change. Colleagues reported that they felt unable to do this
with any reasonable level of reliability. Consequently, it was proposed to ask participants, deliberating in pairs, to identify, as a numbered list

- all the 'strengths of the course' identified in a deliberation,
- all the 'weaknesses of a course', and
- all the recommendations for change that emerged during the deliberation.

Several small trials of this approach were carried out. Participants agreed that these headings and their numbered lists permitted them to summarise adequately the points raised during their deliberations.

The investigations described in this chapter were not only planned in relation to the third aim of this thesis; to investigate whether a statistical analysis in the curriculum evaluation process adds to its usefulness; but also to continue the exploration of the second aim; to investigate that process in a wide range of educational settings.

**The extended curriculum evaluation process**

The extended curriculum evaluation process used in the investigations reported in this chapter is as follows.

**STAGE ONE.** Identification of the issue and elements for review.

**STAGE TWO.** The discovery of the various perspectives of those involved.

2a. Identification of the constructs.
2b. Compilation of the evaluation sheets.
2c. Completion by participants of an evaluation sheet for each element.

Up to this stage, the curriculum evaluation process was identical with that investigated in chapter seven. The following stages were designed to attempt to answer the third aim of this thesis.

2d. Transfer of data from evaluation sheets to grid matrices and analysis of half the data using McQuitty's Hierarchical Linkage Analysis (HLA) and the drawing of element and construct cluster 'trees'. (An example of such an analysis drawn from this research is given in appendix D.) The other half of the data remained unanalysed.

STAGE THREE. The deliberation by all participants.
Participants in this stage were divided into two groups.

Group A used the following data on which to base their deliberations -
   i. completed evaluation sheets
   ii. grid matrices,
   iii. element and construct cluster 'trees' using the HLA computer printouts.

Group B used the following data on which to base their deliberations -
   i. completed evaluation sheets
   ii. grid matrices.

The numbers of strengths, weaknesses and recommendations for
change generated by the two groups were then compared.

STAGE FOUR Written summaries of deliberations arising from groups A and B.

STAGE FIVE An account of what happened arising from Stage four.

The hypothesis tested in all the investigations in this chapter was 'that there was no significant difference between the number of strengths, the number of weaknesses and the number of suggestions for improvement arising from deliberation based on data available from -

a) completed evaluation sheets
b) grid matrices
c) element and construct 'trees' derived from HLA than from deliberation based on data available from

a) completed evaluation sheets
b) grid matrices.'

Investigations using the extended curriculum evaluation process

Investigation 10 The evaluation of teaching practice by a group of 4th year initial teacher education students.

Investigation 11 Reviewing an in-service B.Ed with teachers in the third year of the course.

Investigation 12 An evaluation of the resources and courses provided by a college, as part of INSET, with a group of teachers on a short course.

Investigation 13 A critical appraisal of six computer programs for use in schools, with a group of teachers reading for an M.Ed/Diploma in Educational Computing.

Investigation 14 An evaluation of software styles, with the
same teachers as in investigation 13.

Investigation 15 A review of their final teaching practice by a group of 3rd year Hons B.Ed students.
THE EVALUATION OF TEACHING PRACTICE BY A GROUP OF 4TH YEAR INITIAL TEACHER EDUCATION STUDENTS

On November 8th and 15th 1983, a group of 4th Year BEd students met to evaluate Teaching Practice. A brief outline of personal construct theory and its possible application to curriculum evaluation was given. Nobody at this stage was told about HLA nor about drawing the cluster trees of constructs and elements.

STAGE ONE: The identification of the issue and the elements. Teaching practice had been chosen as the issue for review since this group of students indicated that this was the most personally significant part of their BEd Course. The group was asked to identify what to them were the significant elements of teaching practice. These were written on the blackboard and discussion continued until the students felt that the list was complete, and there was agreement as to the meanings of the elements.

The element list was
My supervisor
My school
My classroom teacher
The Assessment process
Length of practice
Attitude of school staff
Pre-teaching contact with school

Extra-curricular activities

STAGE TWO  The discovery of the various perspectives of those involved.

Stage 2a. The identification of the constructs by which each element is to be evaluated.

The students were asked to suggest criteria by which they judged the value of the above teaching practice elements. These were written on the blackboard and converted into constructs. Each construct was discussed to establish shared meaning and, if necessary, modified as the group felt appropriate.

Stage 2b  The compilation and production of evaluation sheets

While the students were having a coffee break, the constructs were compiled into an evaluation sheet, and enough evaluation sheets duplicated for all the elements to be evaluated by each student.

An evaluation sheet is found on the next page.
EVALUATION SHEET FOR TEACHING PRACTICE

ELEMENT ........................................

( Instructions please write the first element here and then complete the evaluation sheet by ringing your responses on all the rating scales. When completed, take a second evaluation sheet and complete it for the second element and so on, until all eight elements have been rated by you.)

CONSTRUCTS RATING SCALE

This element -

1 helped to give me a satisfying experience YES! Yes yes? no? No NO!

2 helped my professional development YES! Yes yes? no? No NO!

3 helped me to develop good relationships with my pupils YES! Yes yes? no? No NO!

4 helped me to develop my skills of classroom management YES! Yes yes? no? No NO!

5 helped me to plan lessons that were appropriate for the pupils YES! Yes yes? no? No NO!

6 helped me to develop good relationships with teachers in the school YES! Yes yes? no? No NO!

7 enabled me to try out new teaching methods YES! Yes yes? no? No NO!

8 made me feel confident YES! Yes yes? no? No NO! my confidence.

At the end of this, please staple all eight evaluation sheets together into a booklet. The completion of these evaluation sheets is preparation for the all important discussion to come.
Stage 2c  The completion by participants of an evaluation sheet for each element and the entry of the data onto a grid matrix.

Evaluation sheets were completed by ringing the response on the rating scale that was seen as most appropriate for the element in terms of that construct.

Stage 2d Transfer of data from evaluation sheets to grid matrices and analysis of half the data

The students then scored their responses on the rating scales (YES!-6; Yes-5; yes? -4; no? -3; No-2; NO!-1) and entered them on a grid matrix. The first session with the students ended at this point. Before the next session, the students' names were divided into two approximately equal groups (A and B)

The data from the grid matrices of Group A were then analysed according to the HLA computer program and cluster trees drawn.

Stage Three  Deliberation by all participants based on the perspectives revealed:

- in Group A from the completed evaluation sheets, grid matrices, HLA printouts and construct trees.

- in Group B from the completed evaluation sheets and grid matrices.

The second session began by dividing the students into groups A and B.

The groups were sent to separate rooms.

Group A was introduced briefly to HLA and given their evaluation sheets, grid matrices, computer print-outs, and element and construct trees. The group were then given the following guidelines for using their 'trees' as a basis for
deliberation in pairs.

GUIDELINES FOR USING ‘TREES’ AS A BASIS FOR DELIBERATION

1) Remember that the lower on the ’y’ axis the elements or constructs are linked, the HIGHER the mathematical relationship that exists between those elements or constructs.

2) Make careful note of any high mathematical relationships between groups of two or more elements and note the level of relationship between other groups.

3) Provide, WHERE YOU CAN, personal reasons to account for the levels of relationship between the elements, as shown on the cluster trees. Remember, however, that a mathematical relationship does not necessarily indicate that a personally meaningful relationship exists.

4) Make careful note of any high mathematical relationships between groups of two or more constructs and note the level of mathematical relationship between other constructs.

5) Consider the possibility of superordinate constructs, they are ways of construing that subsume subordinate constructs.

6) You may, of course, use in your deliberation any of the other data available to you, such as completed evaluation sheets, completed grid matrices and computer printouts.

7) Arising from this part of the deliberation identify the strengths and weaknesses in the elements and then make recommendations for change. Please write these on the sheets provided.

Group B were also asked to deliberate in pairs, but in their case, this was based on their evaluation sheets and grid matrices only. Out of their deliberations, they were asked to identify the strengths and weaknesses in the elements, and then make recommendations for change. These were written on sheets provided. Each pair in both groups were asked to continue with their deliberations until they thought they had exhausted their list of strengths, weaknesses and
recommendations for change.

Comparison of Group A and Group B deliberation summaries

Group A
(Grid matrices subjected to HLA with element and construct trees drawn)

<table>
<thead>
<tr>
<th>Students' initials</th>
<th>No. of Strengths</th>
<th>No. of Weaknesses</th>
<th>No. of Recommendations for change</th>
</tr>
</thead>
<tbody>
<tr>
<td>SC/JD</td>
<td>3</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>AH/MD</td>
<td>7</td>
<td>7</td>
<td>3</td>
</tr>
<tr>
<td>JD/SC</td>
<td>3</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>JW/KR</td>
<td>4</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>RE/GG</td>
<td>3</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>DH/JK</td>
<td>3</td>
<td>3</td>
<td>5</td>
</tr>
</tbody>
</table>

Group B
(no access to statistical analysis of grids)

<table>
<thead>
<tr>
<th>Students' initials</th>
<th>No. of Strengths</th>
<th>No. of Weaknesses</th>
<th>No. of Recommendations for change</th>
</tr>
</thead>
<tbody>
<tr>
<td>JH/CS</td>
<td>6</td>
<td>7</td>
<td>4</td>
</tr>
<tr>
<td>GG/PH</td>
<td>4</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>AB/AM</td>
<td>9</td>
<td>14</td>
<td>11</td>
</tr>
<tr>
<td>PR/SB</td>
<td>10</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>JJ/LG</td>
<td>8</td>
<td>7</td>
<td>11</td>
</tr>
<tr>
<td>AB/BB</td>
<td>9</td>
<td>11</td>
<td>7</td>
</tr>
</tbody>
</table>

Statistical analysis of these results
The null hypothesis is that differences between groups A and B are due to chance factors.
The use of the Mann-Whitney test

It was decided to use the non-parametric Mann-Whitney test since two randomly assigned groups are investigated under two conditions and that no assumptions can be made about the normal distribution of the data; although it is possible to rank the data.

Null Hypothesis One.
' That the differences between the number of strengths identified in group A and the number of strengths identified in group B are due to chance factors.'

Results of the Teaching Practice Evaluation

<table>
<thead>
<tr>
<th></th>
<th>Group A Number of strengths</th>
<th>3</th>
<th>7</th>
<th>3</th>
<th>4</th>
<th>3</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Rank order</td>
<td>2.5</td>
<td>8</td>
<td>2.5</td>
<td>5.5</td>
<td>2.5</td>
<td>2.5</td>
</tr>
<tr>
<td></td>
<td>Group B Number of strengths</td>
<td>6</td>
<td>4</td>
<td>9</td>
<td>10</td>
<td>8</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>Rank order</td>
<td>7</td>
<td>5.5</td>
<td>10.5</td>
<td>12</td>
<td>9</td>
<td>10.5</td>
</tr>
</tbody>
</table>

The sum of ranks of the sample A (since sample sizes are the same) is \( T \) and is \( = 23.5 \)

\[ U = \frac{N_a N_b}{2} + N_a(N_a+1)/2 - T \]

\[ U = 36 + 21 - 23.5 = 33.5 \]

\[ U' = N_a N_b - U \]

\[ U' = 36 - 33.5 = 2.5 \]

As \( U' \) is less than \( U \), look up \( U' \) in the Mann-Whitney Table. Table value for \( N_a=6 \) and \( N_b=6 \) is 5. The observed value of 2.5 is less than the table value, therefore the difference in scores under the two conditions is significant at the 5%
level.

Therefore there is a significant difference (at the 5% level) between the number of strengths identified in group A and the number of strengths identified in group B.

Null Hypothesis Two

'That the differences between the number of weaknesses identified in group A and the number of weaknesses identified in group B are due to chance factors.'

<table>
<thead>
<tr>
<th>Group A</th>
<th>Number of weaknesses</th>
<th>3</th>
<th>7</th>
<th>4</th>
<th>3</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rank order</td>
<td>4</td>
<td>8</td>
<td>6</td>
<td>4</td>
<td>1.5</td>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Group B</th>
<th>Number of weaknesses</th>
<th>7</th>
<th>2</th>
<th>14</th>
<th>8</th>
<th>7</th>
<th>11</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rank order</td>
<td>8</td>
<td>1.5</td>
<td>12</td>
<td>10</td>
<td>8</td>
<td>11</td>
<td></td>
</tr>
</tbody>
</table>

The sum of ranks of the sample A (since sample sizes are the same) is T and is = 27.5

\[ U = \frac{NaNb}{2} + \frac{Na(Na+1)}{2} - T \]

\[ U = 36 + 21 - 27.5 = 29.5 \]

\[ U' = NaNb - U \]

\[ U' = 36 - 29.5 = 6.5 \]

As U is less than U', look up U in the Mann-Whitney Table. Table value for Na=6 and Nb=6 is 5. The observed value of 6.5 is not equal to or less than the table value, therefore the difference in scores under the two conditions is not significant.

Therefore there is no significant difference between the number of weaknesses identified in group A than the number identified in group B.
Null Hypothesis Three

'That the differences between the number of suggested improvements identified in group A and the number of suggested improvements identified in group B are due to chance factors.'

<table>
<thead>
<tr>
<th>Group A</th>
<th>Number of suggested improvements</th>
<th>5</th>
<th>3</th>
<th>3</th>
<th>5</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rank order</td>
<td></td>
<td>7</td>
<td>1.5</td>
<td>1.5</td>
<td>7</td>
<td>4</td>
<td>7</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Group B</th>
<th>Number of suggested improvements</th>
<th>4</th>
<th>4</th>
<th>11</th>
<th>8</th>
<th>11</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rank order</td>
<td></td>
<td>4</td>
<td>4</td>
<td>11.5</td>
<td>10</td>
<td>11.5</td>
<td>9</td>
</tr>
</tbody>
</table>

The sum of ranks of the sample A (since sample sizes are the same) is T and is \( T = 28 \)

\[ U = Na Nb + Na(Na+1)/2 - T \]

\[ U = 36 + 21 - 28 = 29 \]

\[ U' = Na Nb - U \]

\[ U' = 36 - 29 = 7 \]

As \( U' \) is less than \( U \), look up \( U' \) in the Mann-Whitney Table.

Table value for \( Na=6 \) and \( Nb=6 \) is 5. The observed value of 7 is more than the table value, therefore the difference in scores under the two conditions is not significant.

Therefore there is not a significant difference between the number of recommendations for change identified in group A compared with the number of recommendations for change identified in group B.

Conclusion

The results of this investigation indicate no advantage in
having a deliberation based on data available from -

a) completed evaluation sheets
b) grid matrices
c) element and construct trees derived from HLA

rather than a deliberation based on data available from

a) completed evaluation sheets
b) grid matrices.

STAGE FOUR   Written summary of the deliberations.

This is presented under the headings that were given to the students. The summaries are based on deliberations from both groups.

Strengths of Teaching Practice.

A good supervisor was thought to be a great strength. A helpful supervisor was seen as someone with a good knowledge of the student's subject and of the school and its staff. A good supervisor builds confidence and offers constructive criticism. Written appraisals of lessons from supervisors were appreciated by students.

A good school can be a great strength. A helpful school for teaching practice was seen as one that was well organised, well resourced and with good discipline. Co-educational schools widened the students' experience, as did a broad curriculum.

A supportive Head of Department or teacher-in-charge was seen as very important, that is one who gave helpful suggestions, rather than criticism alone, and did not use the
student's presence as an excuse to leave the classroom. Such teachers preserved the student's autonomy while remaining inconspicuously available. Teachers' reports on student-teachers could be very helpful.

A second opinion on the assessment of distinction and fail grades was seen as a strength.

The lengths of the various teaching practices were felt to be satisfactory by about half the students. A welcoming, helpful staff was seen as a strength, as was a friendly cooperative attitude amongst them. Pre-practice contact with the school was seen as essential. Extra-curricular activities were seen as helpful in developing relationships with both pupils and staff. Teaching practice allowed the student to learn new methods and to explore different teaching styles. It also enabled students to decide if they really wanted to teach and, if so, what sort of department and school they would prefer to teach in.

**Weaknesses of Teaching Practice.**

A student's supervisor could be a weakness, if he or she did not have good relationships with the staff, sufficient knowledge of the school and of the subject(s) being taught. Insufficient pre-practice contact with the supervisor and infrequent supervisory visits to the school were a handicap. Some students had the problem of trying to meet the conflicting expectations of supervisors and school teachers. Being placed in certain schools could be a weakness; for
example, a school teaching a narrow curriculum. It was recognised that the limits on the choice of schools available could disadvantage students. Lack of information as to what was to be expected from a student on Teaching Practice, and lack of liaison between college and school was a problem. Schools did not always keep students informed of day to day changes that affected them.

Those teachers who tried to mould students in their own image and those adverse to new ideas and methods presented the students with problems. A poor relationship between the class teacher and pupils could adversely affect the student. Students had to be watchful of the educational labels placed on pupils by class teachers.

The process of assessing Teaching Practice was seen as a constraint on trying out new ideas and the very presence of an assessor in the classroom could adversely affect performance. The conflicting roles of support and assessor played by the supervisor often made the relationship with the student difficult. Students were sometimes not aware of their grade until the end of the practice and were unclear as to the criteria by which they were judged. There was a feeling that supervisors' perceptions of what constituted a distinction grade or a fail grade varied from supervisor to supervisor. Unfortunately, the external moderator usually saw only one lesson and appeared to the students to be highly influenced by the supervisor and school. Teachers were not thought to have enough say in the students' gradings. Some students felt the final practice was not long
enough. There was not enough pre-teaching contact with the school. It was difficult to prepare adequately with insufficient knowledge of the pupils and classes. The secondary students' summer term visit usually corresponded with the public examinations. Headteachers and heads of departments did not always provide enough background information on the school.

The importance of involvement in extra curricular activities was not sufficiently stressed by the college. It was also felt that too heavy a time-table could be a weakness and that students were not always allowed enough preparation time.

**Recommendations.**

1) A more careful matching of supervisor and student, with students involved in the choice of supervisor.
2) More time-tabled, pre-teaching contact with supervisor.
3) A more careful selection of schools - preferably large, mixed schools with broad curricula.
4) A more careful choice of the teacher-in-charge of the student.
5) Better liaison between college and schools so that teachers are clear as to what is to be expected from students and how they are to be assessed.
6) The supervisor should have a good knowledge of the school and staff and have observed the student's class(es) being taught by other teachers.
7) The assessment procedure should be revised.
   a) The student should be informed of his/her assessment as
the Teaching Practice progresses.

b) The criteria for assessment should be known by all concerned, especially the student and the school.

c) Grades should be replaced by a detailed report.

d) More weight should be given to the teachers' reports.

e) External examiners should observe the student in more than one lesson and, in the case of secondary students, with a variety of classes.

8) There should be a practice in the fourth year.

9) There should be more pre-teaching contact with the school.

10) The value of involvement in extra-curricular activities should be stressed by the college.

11) Students should be given more time for appraisal and preparation.

12) There should be regular meetings between students, supervisors and teachers to discuss the student's progress and problems.

13) A named teacher, with whom the student can relate and other than his/her teacher-in-charge, would be valuable.

14) Fourth year students could usefully talk to those in lower years about Teaching Practice.

STAGE FIVE An account of what happened as a result of stage four.

The summary of the deliberations has been presented to the Course Leader and to the appropriate college committee.

Comments arising from investigation

The general attitude to this evaluation was good; probably because teaching practice has such a high level of significance to them.
Stages one and two proceeded smoothly. In Stage 3, some of the pairs in Group A had problems in understanding the print-outs and element and construct trees. Any difficulties experienced after the initial explanation were dealt with on an individual basis.

Both groups became very involved at the deliberation stage which in many cases continued for a considerable period of time. The pairs in Group B found that the varying perspectives revealed by comparing evaluation sheets provided plenty of material on which to base a deliberation. The pairs in Group A claimed that they found the element and construct trees interesting and, in some cases, personally revealing. However, the possible access to underlying structures revealed by the analysis seemed not to add to the usefulness of the deliberation in terms of the identification of numbers of strengths, weaknesses and recommendations for change. In fact, in this investigation, Group A produced a narrower range for each category, although this was only significant at the 5% level for the number of 'strengths' identified. It may be that Group A had found the mathematical analysis of their evaluation sheets inhibiting and the search for possible deeper structures, revealed by the trees, distracting.

Discussion following the completion of the process with all participants together showed a general enthusiasm for the process. In particular, it was felt that exploring similarities and differences in perspective highlighted
problem areas and led to recommendations for improvements. Despite the lack of evidence of advantage given to the deliberation resulting from the provision of element and construct trees, both groups expressed considerable interest in them. Several members of group B asked that their data should be subjected to H.L.A. so that they could draw and examine their own trees.
INVESTIGATION ELEVEN
REVIEWING AN IN-SERVICE B.ED COURSE

In the autumn term of 1983, it was decided to undertake another review of the In-Service BEd (CNAA) for Serving Teachers at a College of Higher Education. The course members invited to participate in this review were in the first term of their final year of a three year course. This course appraisal would contribute to the overall review in preparation for the visit of the CNAA; this degree course was due for revalidation.

The curriculum evaluation process took place over two two-and-a-half hour sessions. The first session began with a brief outline of personal construct theory and its possible application to curriculum evaluation. Nobody at this stage was told about HLA, nor about drawing the cluster trees of elements and constructs.

STAGE ONE The identification of the issue and the elements

The issue for review was the

"The BEd (CNAA) course (from Oct. 1981 to Nov. 1983) at this college of higher education".

In order to ensure that all the taught components of the course would be reviewed, it was decided to provide the elements. The teachers were therefore presented with an element list that included all the course components taught between Oct. 1981 and Nov. 1983.) Discussion took place and eventually two lists of elements were agreed. (There are two lists as the CDT (Creative Design and Technology) and PE
teachers followed a slightly different course from that of the General Curriculum Course.

**Lists of agreed elements**

<table>
<thead>
<tr>
<th>PE/CDT</th>
<th>General Curriculum Course</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Classroom Interaction</td>
<td>1. Classroom Interaction</td>
</tr>
<tr>
<td>2. Learning and Development</td>
<td>2. Learning and Development</td>
</tr>
<tr>
<td>3. School and Society</td>
<td>3. School and Society</td>
</tr>
<tr>
<td>5. PE/CDT</td>
<td>5. Aspects of secondary curriculum</td>
</tr>
<tr>
<td>7. Assignments</td>
<td>7. Language across the curriculum</td>
</tr>
<tr>
<td>8. Tutorials</td>
<td>8. Pastoral care</td>
</tr>
<tr>
<td>10. Elective</td>
<td></td>
</tr>
<tr>
<td>11. Assignments</td>
<td></td>
</tr>
<tr>
<td>12. Tutorials</td>
<td></td>
</tr>
<tr>
<td>13. Seminars</td>
<td></td>
</tr>
</tbody>
</table>

The major assignment 'Project' was omitted, as the students had not yet experienced that part of the course.

**STAGE TWO** The discovery of the various perspectives of those involved.

Stage2a. The identification of the constructs by which each element is to be evaluated.

The constructs used in the previous review of this course (see Investigation one on page...) were displayed on the board and the teachers asked to consider them and modify,
delete and/or add to them.

Stage 2b. The evaluation sheets were then compiled as in the previous investigations and enough evaluations sheets duplicated for all the elements to be evaluated by each of the participants. The evaluation sheet was as follows on the next page.
EVALUATION SHEET FOR TEACHING PRACTICE

ELEMENT ........................................

(Instructions please write the first element here and then complete the evaluation sheet by ringing your responses on all the rating scales. When completed, take a second evaluation sheet and complete it for the second element and so on, until all the elements have been rated by you.)

CONSTRUCTS RATING SCALE

This element -

1 was well structured (inadequately structured YES! Yes yes? no? No NO! structured)

2 was well presented (inadequately presented YES! Yes yes? no? No NO! presented)

3 helped me to relate theory to practice (unhelpful in relating..)

4 was appropriately timed (inappropriately timed YES! Yes yes? no? No NO! timed)

5 assisted me to critically reflect on current educational practice (did not..)

6 introduced me to new ideas (failed to..)

7 increased my confidence (did not..)

8 improved my teaching (had no influence..)

9 provided satisfactory contact with tutors (unsatisfactory..)

10 was adequately resourced (inadequately ..)

11 was thought provoking (not stimulating..)

12 improved my understanding of the needs of pupils (did not..)

13 was a valuable use of time (waste of time!)

YES! Yes yes? no? No NO!

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14 helped me to consider the wider context YES! Yes yes? no? No NO!
15 helped me to make an informed evaluation of my teaching YES! Yes yes? no? No NO!

At the end of this, please staple all the evaluation sheets together into a booklet. The completion of these evaluation sheets is preparation for the all important discussion to come.

Stage 2c the completion by the participants of the evaluation sheets and the entry of the data on a grid matrix.

The evaluation sheets were completed by ringing the response on the rating scale that was seen as most appropriate for that element in terms of that construct.

Stage 2d Transfer of data from evaluation sheets to grid matrices and analysis of half the data

Having obtained ratings for all the elements on each of the constructs these were scored and entered on a grid matrix. The first session was completed. Before the next session the teachers were divided into two approximately equal groups. The data from group A was then analysed according to the H.L.A. program and cluster trees drawn up.

STAGE THREE Deliberation by all participants based on the perspectives revealed in Group A by the completed evaluation sheets, and matrices, HLA printouts and construct and element trees. in Group B by the completed evaluation sheets and grid matrices. The second session began by dividing the teachers into two
groups A and B according to whether their raw data had been analysed by HLA or not. The two groups were sent to different rooms.

Group A were introduced briefly to HLA and given their completed evaluation sheets, grid matrices, HLA printouts and construct and element trees. The group were then given the guidelines outlined in Investigation Ten as a basis for deliberation in pairs. (The pairs were made up either of two representatives of the General Curriculum option or two representatives of the CDT/PE option). They were asked to summarise their deliberations on the sheets provided under the headings of strengths, weaknesses and recommendations for change.

Group B were given their completed evaluation sheets and grid matrices and also asked to deliberate in pairs. They were asked to summarise their deliberation in the same way as Group A. (The pairs in this group were made up as in Group A).
Comparison of Group A and Group B deliberation summaries

**Group A**
(Grid matrices subjected to HLA with element and construct trees drawn)

<table>
<thead>
<tr>
<th>Pair number</th>
<th>No. of Strengths</th>
<th>No. of Weaknesses</th>
<th>No. of Recommendations for change</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>7</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>2</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>3</td>
<td>2</td>
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</tr>
<tr>
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<td>1</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>5</td>
<td>3</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

**Group B**
(no statistical analysis of grids)

<table>
<thead>
<tr>
<th>Pair number</th>
<th>No. of Strengths</th>
<th>No. of Weaknesses</th>
<th>No. of Recommendations for change</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>12</td>
<td>21</td>
<td>10</td>
</tr>
<tr>
<td>7</td>
<td>9</td>
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<td>10</td>
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<td>8</td>
</tr>
<tr>
<td>10</td>
<td>9</td>
<td>14</td>
<td>11</td>
</tr>
<tr>
<td>11</td>
<td>4</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>12</td>
<td>7</td>
<td>6</td>
<td>3</td>
</tr>
</tbody>
</table>

**Statistical analysis of these results**

The null hypothesis is that differences between groups A and B are due to chance factors.
(The Mann-Whitney test is again used for reasons given in investigation ten)
Null Hypothesis One.
'That the differences between the number of strengths identified in group A and the number of strengths identified in group B are due to chance factors.'

Results of the B.Ed (CNAA) Review

<table>
<thead>
<tr>
<th>Group</th>
<th>Number of strengths</th>
<th>Rank order</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group A</td>
<td>7 3 2 1 3</td>
<td>7.5 3.5 2 1 3.5</td>
</tr>
<tr>
<td>Group B</td>
<td>12 9 6 10 9 4 7</td>
<td>12 9.5 6 11 9.5 5 7.5</td>
</tr>
</tbody>
</table>

The sum of ranks of the sample A (since this is the smaller sample) is $T$ and is $= 17.5$

$U = \frac{Na \cdot Nb}{2} + Na(Na+1)/2 - T$

$U = 35 + 15 - 17.5 = 32.5$

$U' = NaNb - U$

$U' = 35 - 32.5 = 2.5$

As $U'$ is less than $U$, look up $U'$ in the Mann-Whitney Table.

Table value for $Na=5$ and $Nb=7$ is 5. The observed value of 2.5 is less than the table value, therefore the difference in scores under the two conditions is significant at the 5% level.

Therefore there is a significant difference (at the 5% level) between the number of strengths identified in group A and the number identified in group B.

Null Hypothesis Two
'That the differences between the number of weaknesses identified in group A and the number of weaknesses identified
in group B are due to chance factors.'

<table>
<thead>
<tr>
<th>Group</th>
<th>Number of weaknesses</th>
<th>Rank order</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>6 3 2 3 2</td>
<td>8.5 5.5 2.5 5.5 2.5</td>
</tr>
<tr>
<td>B</td>
<td>21 8 4 8 14 2 2 6</td>
<td>13 10.5 7 10.5 12 2.5 2.5 8.5</td>
</tr>
</tbody>
</table>

The sum of ranks of the sample A (since this is the smaller sample) is $T$ and is $= 24.5$

$$U = NaNb + Na(Na+1)/2 - T$$

$$U = 40 + 15 - 24.5 = 30.5$$

$$U' = NaNb - U$$

$$U' = 40 - 30.5 = 9.5$$

As $U'$ is less than $U$, look up $U'$ in the Mann-Whitney Table. Table value for $Na=5$ and $Nb=7$ is 5. The observed value of 9.5 is greater than the table value, therefore there is no significant evidence that the scores under the two conditions differ.

Therefore there is no significant difference between the number of weaknesses identified in group A and the number of weaknesses identified in group B.

**Null Hypothesis Three**

'`That the differences between the number of suggested improvements identified in group A and the number of suggested improvements identified in group B are due to chance factors.'
<table>
<thead>
<tr>
<th>Group</th>
<th>Number of suggested improvements</th>
<th>Rank order</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>4 3 3 3 3</td>
<td>7 3.5 3.5 3.5 3.5</td>
</tr>
<tr>
<td>B</td>
<td>10 6 8 8 11 3 3</td>
<td>11 8 9.5 9.5 12 3.5 3.5</td>
</tr>
</tbody>
</table>

The sum of ranks of the sample A (since this is the smaller sample) is T and is = 21

\[ U = N_a N_b + N_a(N_a+1)/2 - T \]

\[ U = 35 + 15 - 21 = 29 \]

\[ U' = N_a N_b - U \]

\[ U' = 35 - 29 = 6 \]

As \( U' \) is less than \( U \), look up \( U' \) in the Mann-Whitney Table. Table value for \( N_a=5 \) and \( N_b=7 \) is 5. The observed value of 6 is not less than the table value, therefore there is no significant evidence that the scores under the two conditions differ.

Therefore there is no significant difference between the number of recommendations for change identified in group A compared with the number of recommendations for change identified in group B.

**Conclusion**

The results of this investigation indicate no advantage in having a deliberation based on data available from -

a) completed evaluation sheets

b) grid matrices

c) element and construct trees derived from HLA

rather than a deliberation based on data available from
a) completed evaluation sheets
b) grid matrices.

STAGE FOUR Written summary of the deliberations.
The summary is presented under the headings given to the students, strengths of the course, weaknesses of the course and recommendations for change

Strengths.
The course was seen as valuable in that it updated the teachers, set their own practice within a broader context and made them aware of current documents and trends. Another main strength was seen as the opportunity for professional contact with other teachers and the resulting exchange of views.
The assignments were seen as encouraging critical reflection, sorting out ideas and identifying professional aims. The freedom of choice allowed in the small group/individual study and the elective was appreciated.
Certain courses were identified as of particular value; those named were Classroom Interaction, Pastoral Care, School and Community and Curriculum; context, design and innovation - especially the evaluation component. Physical education was also mentioned. Tutorials were appreciated and the course was seen as increasing teachers' confidence.

Weaknesses.
The course could have been covered in a shorter period of time. Lectures did not always seem adequately prepared or
stimulating and times and titles were sometimes changed. There was sometimes a feeling that teachers of long experience were being talked down to by theoreticians with little practical experience. Courses sometimes had width at the expense of depth and supplementary tutors were thought to lack commitment to the course.

It was thought that not sufficient consideration had been given to teachers' travelling arrangements and school commitments. This led to time being wasted by staff and teachers. The attitude to attendance was criticised. It was thought too easy to get away with non-attendance. This led to small seminar groups which limited the availability of teacher expertise.

Assessment topics were sometimes too broad and the guidelines and objectives not always clear. The timing of assignments was sometimes difficult for teachers. Lack of books and other resources could be a problem.

Certain courses were seen as weak. Those named were Language across the curriculum and Learning and Development.

Recommendations for change.

1) The course should take less time (two years instead of three or one year full-time secondment)
2) There should be a required level of attendance for satisfactorily completing the course
3) Lectures should be more structured and provocative with less variation in the standard of lecturers
4) Lectures could be restricted to one night a week to ensure
maximum attendance

5) Handouts should complement not duplicate lectures
6) Assignments should be more structured and objectives and
criteria for evaluation made clear. They could be more
directly related to the lecture inputs. Careful monitoring of
library resources relating to assignments should be carried
out.

7) Seminars should be more structured and make a better use
of the teacher expertise available.

8) The library should be open at more times suitable for in-
service students. An introductory sessions to library usage
should be given.

9) Travelling time and school commitments should be taken
into consideration in course planning.

10) There should be more equality in what is demanded in the
two legs of the degreee and more links made between them.

11) Opportunities should be made for occasional mixing of
year groups. In particular first year students could gain
confidence from meeting third years who had almost completed
their course.

12) More psychology could be included and the Language across
the curriculum course needed re-writing.

STAGE FIVE  An account of what happened

The summary was given to the course leader who incorporated
it into his course evaluation for the CNAA.
Author's comments arising from investigation eleven

Group A showed great interest in the computer print-outs and the element and construct trees. There seemed to be little resistance to use the statistically analysed data and the deliberations were entered into with enthusiasm. Group B also appeared to be highly involved and, like Group A, were soon involved in lively deliberation with free expression of views.

But despite their interest in the trees, Group A's deliberation led to less strengths, weaknesses and recommendations for change being identified, although this was only significant as far as the strengths were concerned. The comparing of the scoring of the evaluation sheets by Group B provoked so much discussion that in this situation any extra insights which might have been provided by the trees appeared to give no advantage. The concentration on the trees may have inhibited the evaluation of the course by Group A. It must be stressed that this was the first time that these teachers had used data subjected to HLA. But the constraints on time available for course and school evaluation make it unlikely that teachers would ever become frequent users of such data and any school evaluation is also likely to have some inexperienced members participating.
In the Spring term 1984, the author led a short in-service course on 'School Self-review' that involved, in the main, headteachers and deputy headteachers. As part of the short course, the teachers reviewed the college's resources and courses for teachers, using the proposed curriculum evaluation process. The evaluation took two sessions of one and a half hours each. The first session began with a brief outline of personal construct theory and its possible application to curriculum evaluation. Nobody at this stage was told about HLA nor about the cluster trees of elements and constructs.

STAGE ONE The identification of the issue and the elements. The issue chosen was 'The college's resources and courses for teachers' as all the course members had some experience of these. The teachers were asked to name college resources and courses. As these were suggested they were written on the blackboard. Only resources and courses of which all participants had some knowledge or experience were selected as elements.

The element list was as follows.

  In-service BEd.
  Mathematics Diploma

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STAGE TWO  The discovery of the various perspectives of those involved.

Stage 2a  The identification of the constructs by which each element is to be evaluated.

The teachers were asked to think about the criteria they could use to judge the effectiveness of the elements they had identified. These were written as they were suggested and converted into constructs. They were then discussed to establish shared meaning and modified, added to or deleted as the group felt appropriate.

Stage 2b. The compilation and production of evaluation sheets.

While the teachers were having a coffee break the constructs were compiled into an evaluation sheet and enough evaluation sheets duplicated for all the elements to be evaluated by each teacher.

Stage 2c The completion by participants of an evaluation
Sheet for each element

The evaluation sheets were completed by ringing the response on the rating scale that was seen as most appropriate for that element in terms of that construct.

Stage 2d Transfer of data from evaluation sheets to grid matrices and analysis of half the data

The teachers then converted their responses on the rating scales to numerical equivalents (printed at the bottom of the grid matrix forms) and entered them on a grid matrix. Before the next session the data from half the grid matrices were analysed according to the HLA computer program and cluster trees were drawn up for course members.
EVALUATION SHEET FOR TEACHING PRACTICE

ELEMENT ..........................................

(Instructions please write the first element here and then complete the evaluation sheet by ringing your responses on all the rating scales. When completed, take a second evaluation sheet and complete it for the second element and so on, until all the elements have been rated by you.)

CONSTRUCTS RATING SCALE

As far as I know,

1 this element encourages teachers to think critically about their teaching  YES! Yes yes? no? No NO! (does not..)

2 this element enhances the professional development of teachers  YES! Yes yes? no? No NO!

3 this element introduces teachers to new ideas  YES! Yes yes? no? No NO! (does not..)

4 schools are well informed about this element  YES! Yes yes? no? No NO! (schools are unaware of this element)

5 the contact between teachers and college staff regarding this element is satisfactory  YES! Yes yes? no? No NO! (unsatisfactory)

6 this element meets needs in local schools  YES! Yes yes? no? No NO! (does not..)

7 this element is attempting to respond to needs in local schools  YES! Yes yes? no? No NO! (seems quite cut off)

8 this element provides stimulating opportunities for teachers in local schools  YES! Yes yes? no? No NO! (does not)

9 this element is available at appropriate times  YES! Yes yes? no? No NO! (is not..)

10 this element is well organised  YES! Yes yes? no? No NO! (is not..)

11 this element allows for discussion between teachers and college staff  YES! Yes yes? no? No NO! (does not)

12 this element reflects what one would expect from College with an Anglican foundation  YES! Yes yes? no? No NO! (does not)

At the end of this, please staple all eight evaluation sheets together into a booklet. The completion of these evaluation sheets is preparation for the all important discussion to come.
STAGE THREE Deliberation by all participants based on the perspectives revealed

- in Group A by the completed evaluation sheets, grid matrices, HLA printouts and construct and element trees.
- in Group B by the completed evaluation sheets and grid matrices.

The second session began by dividing the students into two groups according to whether their raw data had been fed into HLA or not and sending them to different rooms.

Group A were introduced briefly to HLA and given their completed evaluation sheets, grid matrices, HLA printouts and construct and element trees. The group were then given the guidelines outlined in Investigation ten as a basis for deliberation in pairs. They were asked to summarise their deliberations on the sheets provided under the headings of strengths, weaknesses and recommendations.

Group B were given their completed evaluation sheets and grid matrices and also asked to deliberate in pairs. They were asked to summarise their deliberations in the same way as Group A.
Comparison of Group A and Group B deliberation summaries

Group A
(Grid matrices subjected to HLA with element and construct trees drawn)

<table>
<thead>
<tr>
<th>Pair no.</th>
<th>No. of Strengths</th>
<th>No. of Weaknesses</th>
<th>No. of Recommendations for change</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>2</td>
<td>4</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>8</td>
<td>2</td>
</tr>
</tbody>
</table>

Group B
(no access to statistical analysis of grids)

<table>
<thead>
<tr>
<th>Pair no.</th>
<th>No. of Strengths</th>
<th>No. of Weaknesses</th>
<th>No. of Recommendations for change</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>9</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>5</td>
<td>2</td>
<td>4</td>
</tr>
</tbody>
</table>

Statistical analysis of these results

A Mann-Whitney test is not possible, since two groups of 3 pairs are too small. This investigation started with numbers of participants that would have enabled the use of Mann-Whitney but, due to poor weather and other unforeseeable conditions, the number of course members dropped.

Conclusion

The results of this investigation cannot be analysed according to the Mann-Whitney test. Nevertheless it would seem that a visual inspection of the results indicates no
advantage in having a deliberation based on data available from -

a) completed evaluation sheets
b) grid matrices
c) element and construct trees derived from HLA

rather than a deliberation based on data available from

a) completed evaluation sheets
b) grid matrices.

STAGE FOUR  Written summary of the deliberation.
The summary is presented under the headings given to the
teachers, strengths of college courses and resources,
weaknesses of college courses and resources, and
recommendations for college courses and resources.

Strengths.
College courses were seen as a welcome opportunity to meet
other teachers and to exchange ideas. They introduced
teachers to new ideas, encouraged critical reflection and
professional development and met some of the needs in local
schools. It was useful to have a base for courses in addition
to the teachers' centre and the facilities were a resource in
themselves.

Courses and resources identified as of particular value were
Maths Diploma, In Service B.Ed. In Service short courses, The
College Computing Centre, Joint Regional Courses, the Maths
Centre.

Contact between college staff and teachers was of value as
was the help given in schools by some college staff.
The library and recreational facilities were well organised.

**Weaknesses**

The amount of information about courses and distribution of publicity is inadequate. Sometimes too short notice is given. The timing of courses often makes it difficult for teachers to attend.

There are not enough school related courses. There is a lack of real contact between college staff and teachers outside of courses. There is sometimes a mismatch between available college resources and the needs of local schools. Access to the sports facilities and library can be difficult.

**Recommendations.**

1) More information on courses and resources should be produced.

2) There should be a better distribution of publicity relating to courses and resources.

3) Members of the college staff should be associated with particular schools so that they can monitor the schools needs and pass on information of courses and resources. They could in fact ensure that publicity material went on the school notice boards and was drawn to the attention of staff.

4) Timing of courses needs careful thought. Weekends and holiday periods could be considered.

5) The college should take more of its courses out to other areas.

6) More courses should be offered on Pastoral Care,
Management and Teaching methods.

7) College staff should not hesitate in offering help as it is appreciated by schools.

8) More contact should be encouraged between students and schools outside of Teaching practice. Students working with small groups in their main subjects or with remedial children would be welcomed.

STAGE FIVE An account of what happened

The summary was given to the tutor in charge of coordinating information about college courses and resources for schools.

Comments

At the end of the second session the groups came together to discuss the process and notes were taken of the comments made.

The teachers were attracted to a form of evaluation that began with issues identified by the participants. Several of the heads remarked that their staffs found any form of review threatening and became very defensive. They felt that the process would allow them to introduce systematic curriculum review as an ongoing activity in the school. An issue that was not too personally threatening could be chosen as a way of introducing the process. Then, as the staff gained confidence in comparing and deliberating on their various perspectives, more sensitive issues could be reviewed. The stage involving the identification of constructs by which each element is to be evaluated was thought to be particularly
significant. The group felt that the exploration and discussion of the criteria that teachers use to judge worthwhileness was not something that was often done overtly and that much value could be gained from making these criteria public. They also felt that the completing and comparing of evaluation sheets of participants would draw into the deliberation members of staff who made little contribution to open discussion in staff meetings. The existence of a structured review process was seen as providing a certain formality to the review which would enhance its status and prevent it from becoming a pointless meeting to which only certain members contributed.

There was considerable interest in the possible use of the school computer in aiding curriculum review. Several teachers attended computer courses and were anxious to extend its usage within the school. Some of Group A had initial difficulties in understanding the mathematical relationships expressed in the element and construct trees, but these were dealt with on an individual basis and the group found the analysis interesting and revealing. The number of teachers attending the second session did not provide sufficient data for a statistical analysis. However a visual comparison of the numbers of strengths, weaknesses and recommendations identified by the two groups did not indicate that the tree form of feedback had been an advantage. Several of the group suggested that the statistically analysed data might be useful on a personal basis when the individual had time to consider the element and construct trees. In the group
situation, which was the case in a school review, they felt that a comparison of evaluation sheets would be sufficient to elicit a satisfactory range of perspectives on which to base a deliberation.
On January 8th and 9th 1984, 29 serving teachers reading for an M.Ed/ Diploma in Educational Computing met for a weekend course module. The Course leader of this module approached the author to explore the possibility of using the proposed curriculum evaluation process to review -
I. Six computer programs for use in schools.
II. Software styles.

It was decided to include this in the weekend module. The course members were 29 practising teachers and, for the purpose of these two review exercises, were divided into one group of fifteen and another of fourteen.

INVESTIGATION THIRTEEN
A CRITICAL APPRAISAL OF SIX COMPUTER PROGRAMS FOR USE IN SCHOOLS.

At the appropriate point in the weekend programme teachers were introduced to this exercise; an appraisal of six computer programs for use in schools. They were told that the method to be used was one being currently researched. A brief outline of the personal construct theory and its possible application in curriculum evaluation was given. Nobody at this stage was told about HLA, nor about drawing the cluster trees of constructs and elements.
STAGE ONE: The identification of the issue and the elements

The Course leader of this module and the other tutors involved agreed that the issue for review would be 'six computer programs for use in schools' and that the elements would be the following computer programs.

Program a) AUTOSUM
Program b) BOXCLEVER
Program c) INVESTIGATOR
Program d) TRANSFER WAVES
Program e) SUBGAME
Program f) POSTMAN PAT

At this stage the teachers were told the names of the computer programs and it was explained that time would be provided for them to view each program. Teachers were also told that these would be designated the elements in the review process.

Hence elements were provided for participants in this review.

STAGE TWO: The discovery of the various perspectives of those involved

Stage 2a. The identification of the constructs by which each element is to be evaluated

It was decided that, because of shortage of time, constructs would be provided for the teachers, although an opportunity would be given to amend, modify and add to them, if discussion revealed that this was necessary.

The following provided constructs arose from a discussion
among the course tutors and were projected on two VDUs.

As far as I can judge, this computer program (or element)
a) encourages active pupil involvement.
b) encourages activities that are difficult to do without a
c) would be easy for the average pupil to use.
d) would be easy for the computer naive teacher to use.
e) would only occupy pupils for a very short length of time.
f) would facilitate a wide variety of follow up activities.
g) would readily be used by teachers with diverse teaching
   styles.
h) never leaves the user wondering what to do next.
i) is compatible with my current teaching style.
j) is compatible with work that is currently done in my
   school.
k) encourages pupil activities that should occur more often.
l) would support an extension of a teacher's normal style.
m) would usefully extend the curriculum in my school.

The implicit poles were also agreed and are included in the
evaluation sheet on the next page.

The teachers were then invited to consider these constructs
as possible criteria by which the elements could be
evaluated. They were also asked to reject or modify those
constructs they found inadequate or inappropriate and to add
any of their own. It had been decided to introduce an
approach to this negotiation hitherto untried in the testing
of this evaluation process. As already noted, the constructs
had been projected on two video display units clearly visible to all participants. The video display units were attached to a micro-computer; a printer was also connected. During the discussion of each of the constructs, modifications, deletions and additions were made immediately by means of word processing facilities. This enabled a much quicker production of evaluation sheets than in earlier investigations of this curriculum evaluation process. (At this stage in previous investigations a break was needed in order to type and photocopy the agreed evaluation sheets.)

Stage 2b The compilation and production of evaluation sheets.

The resulting constructs were compiled into an evaluation sheet as shown on the next page.

Immediately following the end of the negotiation of the constructs, six evaluation sheets were printed for each teacher using the printer attached to the microcomputer. This enabled course members to pass directly to the next stage of the review.
EVALUATION SHEET FOR SIX COMPUTER PROGRAMS
FOR USE IN SCHOOLS

COMPUTER PROGRAM (OR ELEMENT): ............................................

( Instructions Please write the first element on these dotted line and then complete the evaluation sheet by ringing your responses on all the rating scales. When completed, take a second evaluation sheet and complete it for the second element and so on, until all elements have been rated by you. At the end of this, please staple all the evaluation sheets together into a booklet.)

CONSTRUCTS RATING SCALE
As far as I can judge, this computer program....
1. ..encourages active pupil involvement. YES! Yes yes? no? No NO!
   ...( does not encourage .....)
2. .. encourages activities that are difficult to do without a computer.. YES! Yes yes? no? No NO! ..(does not enable..)
3. ..would be easy for an average pupil to use on his/her own ..
   YES! Yes yes? no? No NO!.. (would not be..)
4. .. would be easy for a computer naive teacher to use ...
   YES! Yes yes? no? No NO! ..(would not be..)
5. ...would occupy pupils for a short length of time ...
   YES! Yes yes? no? No NO! (would keep them busy for ages!)
6. ...would facilitate a wide variety of follow up activities ..
   YES! Yes yes? no? No NO! ( .. would not facilitate..)
7. ... would readily be used by teachers with diverse teaching styles... YES! Yes yes? no? No NO! ..(would not be used..)
8. ... never leaves the user wondering what to do next ...
   YES! Yes yes? no? No NO! ..(frequently leaves the user ..)
9. ..is compatible with my current teaching style ..
   YES! Yes yes? no? No NO! (.. is not compatible..)
10. ... is compatible with work that is currently done in my school... YES! Yes yes? no? No NO! (..is not compatible..)
11...encourages pupil activities that should occur more often ..
   YES! Yes yes? no? No NO! (.... does not encourage..)
12. ... would support an extension to a teacher's normal style...
   YES! Yes yes? no? No NO! (.. would not...)
13... would usefully extend the curriculum in my school ...
   YES! Yes yes? no? No NO! (... would not..)
14. ...represents good value for money...
   YES! Yes yes? no? No NO! (.. represents poor value..)
15. ... is affordable ...  YES! Yes yes? no? No NO!
16. ...is equally attractive to boys and girls ..... 
   YES! Yes yes? no? No NO! (..is not ...) 
17. ... encourages pupil/pupil discussion...
   YES! Yes yes? no? No NO! (..does not encourage..)
18. ...is entertaining for pupils.. YES! Yes yes? no? No NO!
   ...(is not entertaining...)

Stage 2c The completion by participants of an evaluation sheet for each element.

The teachers then spent about 15-20 minutes with each computer program; completing an evaluation sheet for each program as it was viewed. Evaluation sheets were completed by ringing the response on each rating scale which the teacher thought most accurately reflected his/her attitude to that particular program. 

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Stage 2d. Transfer of data from evaluation sheets to grid matrices and analysis of half the data

The teachers scored their responses on rating scales (YES!: 6, Yes: 5, yes?: 4, no?: 3, No: 2, NO!: 1) and entered them in a grid matrix. The teachers were then divided into groups A and B.

Group A were introduced to HLA and then analysed the data from their grid matrices using the HLA computer program. When computer print-outs were available, group A was shown how to represent pictorially the correlations as 'cluster trees' on the charts provided. When the cluster trees were drawn for both elements and constructs, this group was given guidelines for using their trees as a basis for deliberation in pairs.

GUIDELINES FOR USING 'TREES' AS A BASIS FOR DELIBERATION

1) Remember that the lower on the 'y' axis the elements or constructs are linked, the HIGHER the mathematical relationship that exists between those elements or constructs.

2) Make careful note of any high mathematical relationships between groups of two or more elements and note the level of relationship between other groups.

3) Provide, WHERE YOU CAN, personal reasons to account for the levels of relationship between the elements, as shown on the cluster trees. Remember, however, that a mathematical relationship does not necessarily indicate that a personally meaningful relationship exists.

4) Make careful note of any high mathematical relationships between groups of two or more constructs and note the level of mathematical relationship between other constructs.

5) Consider the possibility of super-ordinate constructs, they are ways of construing that subsume subordinate constructs.

6) You may, of course, use in your deliberation any of the other data available to you, such as completed
evaluation sheets, completed grid matrices and computer printouts.

7) Arising from this part of the deliberation identify the strengths and weaknesses in the elements and then make suggestions for improvement. Please write these on the sheets provided.

Group B were also asked to deliberate in pairs but, in their case, this was based on their evaluation sheets and grid matrices only. Out of their deliberation in pairs, they were asked to identify the strengths and weaknesses of the six computer programs and to make suggestions for improvement. (As with group A, all strengths, weaknesses and suggestions for improvement were written on sheets provided.) When this was completed group B was told about the Hierarchical Linkage Analysis and shown how to analyses their data through the HLA computer program. They then drew up element and construct trees. This was done as all members of this course would need to understand HLA and construct and element tree construction during the next part of the evaluation exercise.

STAGE THREE: The deliberation by all participants based on the perspectives revealed
- in group A by the completed evaluation sheets, grid matrices HLA print-outs and construct and element trees.
- in group B by the completed evaluation sheets and grid matrices.

The deliberations were carried out according to the instructions given under Stage 2d above.
Comparison of group A and group B deliberation summaries

Group A (Grid matrices subjected to HLA with element and construct cluster 'trees' drawn)

<table>
<thead>
<tr>
<th>Initials of Participants</th>
<th>Number of Strengths</th>
<th>Number of Weaknesses</th>
<th>Number of Improvements</th>
</tr>
</thead>
<tbody>
<tr>
<td>BB/DW</td>
<td>13</td>
<td>11</td>
<td>7</td>
</tr>
<tr>
<td>CC/BS</td>
<td>5</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>JR/RS</td>
<td>8</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>PA/SC</td>
<td>4</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>DH/PG</td>
<td>10</td>
<td>9</td>
<td>4</td>
</tr>
<tr>
<td>NC/AW</td>
<td>9</td>
<td>7</td>
<td>5</td>
</tr>
<tr>
<td>KM/MM</td>
<td>8</td>
<td>16</td>
<td>8</td>
</tr>
</tbody>
</table>

Group B (Grid matrices completed but NOT subjected to HLA)

<table>
<thead>
<tr>
<th>Initials of Participants</th>
<th>Number of Strengths</th>
<th>Number of Weaknesses</th>
<th>Number of Improvements</th>
</tr>
</thead>
<tbody>
<tr>
<td>AB/AR</td>
<td>13</td>
<td>9</td>
<td>6</td>
</tr>
<tr>
<td>MG/CT</td>
<td>8</td>
<td>13</td>
<td>7</td>
</tr>
<tr>
<td>JM/JD</td>
<td>13</td>
<td>6</td>
<td>8</td>
</tr>
<tr>
<td>DY/DA</td>
<td>8</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>JS/CP</td>
<td>6</td>
<td>8</td>
<td>4</td>
</tr>
<tr>
<td>DHB/TW</td>
<td>7</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>EC/MJ</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>

The Mann-Whitney Test

The null hypothesis is that differences between groups A and B are due to chance factors, that is, that the two samples are drawn from identical populations.
The Mann-Whitney test has been chosen for reasons given in investigation term.

**Null Hypothesis One.**
'That the differences between the number of strengths identified in group A and the number of strengths identified in group B are due to chance factors.'

**The Mann-Whitney Test**

<table>
<thead>
<tr>
<th>Group A Number of strengths</th>
<th>13</th>
<th>5</th>
<th>4</th>
<th>8</th>
<th>10</th>
<th>9</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rank order</td>
<td>13</td>
<td>3</td>
<td>2</td>
<td>7.5</td>
<td>11</td>
<td>10</td>
<td>7.5</td>
</tr>
<tr>
<td>Group B Number of strengths</td>
<td>13</td>
<td>8</td>
<td>13</td>
<td>8</td>
<td>6</td>
<td>7</td>
<td>3</td>
</tr>
<tr>
<td>Rank order</td>
<td>13</td>
<td>7.5</td>
<td>13</td>
<td>7.5</td>
<td>4</td>
<td>5</td>
<td>1</td>
</tr>
</tbody>
</table>

Now as both groups are the same size, T is the sum of ranks in sample A = 54

\[ U = N_a N_b + N_a (N_a + 1)/2 - T \]

\[ U = 49 + 28 - 54 = 23 \]

\[ U' = N_a N_b - U \]

\[ U' = 49 - 23 = 26 \]

As \( U \) is less than \( U' \), look up \( U \) in the Mann-Whitney Table.

Table value for \( N_a=7 \) and \( N_b=7 \) is 8. The observed value of 23 is not equal to or less than the table value, therefore the difference in scores under the two conditions is not significant.

Therefore there is no significant difference between the number of strengths identified in group A and the number identified in group B.
Null Hypothesis Two

'That the differences between the number of weaknesses identified in group A and the number of weaknesses identified in group B are due to chance factors.'

<table>
<thead>
<tr>
<th>Group A Number of weaknesses</th>
<th>11</th>
<th>4</th>
<th>5</th>
<th>9</th>
<th>9</th>
<th>7</th>
<th>16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rank order</td>
<td>12</td>
<td>3</td>
<td>5</td>
<td>10</td>
<td>10</td>
<td>7</td>
<td>14</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Group B Number of weaknesses</th>
<th>9</th>
<th>13</th>
<th>6</th>
<th>4</th>
<th>8</th>
<th>4</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rank order</td>
<td>10</td>
<td>13</td>
<td>6</td>
<td>3</td>
<td>8</td>
<td>3</td>
<td>1</td>
</tr>
</tbody>
</table>

Now as both groups are the same size, $T$ is the sum of ranks in sample $A = 61$

$U = N_a N_b + N_a(N_a+1)/2 - T$

$U = 49 + 28 - 61 = 16$

$U' = N_a N_b - U$

$U' = 49 - 16 = 33$

As $U$ is less than $U'$, look up $U$ in the Mann-Whitney Table. Table value for $N_a=7$ and $N_b=7$ is 8. The observed value of 16 is not equal to or less than the table value, therefore the difference in scores under the two conditions is not significant.

Therefore there is no significant difference between the number of weaknesses identified in group A and the number identified in group B.

Null Hypothesis Three

'That the differences between the number of suggested improvements identified in group A and the number of suggested improvements identified in group B are due to
chance factors.'

<table>
<thead>
<tr>
<th></th>
<th>Group A Number of suggested improvements</th>
<th>Rank order</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>7 4 4 9 4 5 8</td>
<td>10.5 4.5 4.5 14 4.5 7 12.5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Group B Number of suggested improvements</th>
<th>Rank order</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>6 7 8 6 4 2 3</td>
<td>8.5 10.5 12.5 8.5 4.5 1 2</td>
</tr>
</tbody>
</table>

Now as both groups are the same size, T is the sum of ranks in sample A = 57.5

\[ U = N_a N_b + N_a (N_a + 1)/2 - T \]

\[ U = 49 + 28 - 57.5 = 19.5 \]

\[ U' = N_a N_b - U \]

\[ U' = 49 - 19.5 = 29.5 \]

As \( U \) is less than \( U' \), look up \( U \) in the Mann-Whitney Table. Table value for \( N_a = 7 \) and \( N_b = 7 \) is 8. The observed value of 29.5 is not equal to or less than the table value, therefore the difference in scores under the two conditions is not significant.

Therefore there is no significant difference between the number of suggested improvements identified in group A and the number identified in group B.

Conclusion

The results of this investigation support those of our previous trials which have found no advantage in having a deliberation based on data available from -

a) completed evaluation sheets

b) grid matrices

c) element and construct trees derived from HLA

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than from deliberation based on data available from
  a) completed evaluation sheets
  b) grid matrices.

**STAGE FOUR Written summary of deliberations**

The summary is given under the headings that were given to
the teachers involved in the evaluation.

**Strengths of each program.**

**Autosum.**

This program was found to be clearly explained and easy to
use. The size of the figures was good and the variable time
delay was liked. It was thought that the element of
competition would be motivating and the program was good for
drill and practice. It could be adapted to different
situations and provided 'instant work cards' taking pressure
off the teacher.

**Box Clever.**

This program was colourful with good graphics and
presentation. It was unusual, easy to use and was suitable
for special education. It would probably be easy to change
the data base.

**Investigator.**

This was a flexible program using real data which was likely
to kindle enthusiasm. It was easy to use with a well set out
display. It tackled an area which would be difficult to
approach otherwise, and was likely to stimulate further
investigations and discussion between pupils.

**Transverse waves.**

This was a versatile program of considerable use to the teacher as it is difficult to stimulate waves in other ways.

**Subgame.**

An easy to use interactive program. Its particular value is in the different approach it takes to the topic. It actively involves the user and encourages thinking. It was particularly appreciated for the way in which it encouraged discussion about mathematics which can be difficult otherwise.

**Postman Pat.**

This program could be used as an easy introduction to computer usage. It is easy to use and would encourage pupil activity. The graphics are well designed and amusing which make it useful for special education.

**Weaknesses of each program.**

**Autosum.**

The shape and size of the numerals were disliked as were the format and complexity of the initial instructions. There was a lack of control from one sum to another and a lack of ability to stop without using escape. It was thought that there was not enough guidance as to what was happening during the computation. It did not extend the curriculum, was repetitive, not interactive and could become a bore.
Box clever.

The initial instructions are not clear and the program is slow and not easy to use. The use of lower case and upper case letters can be confusing. There is a limited range of words in the data base, and an error in the program is not sorted out so that some correct solutions count as wrong. The reward system is unsatisfactory.

Investigator.

The documentation and instructions on the screen were thought to be poor. It was difficult for a first time user and a graphical output was needed. The searches were slow and it lacked flexibility.

Transverse waves.

The documentation was badly presented and the program difficult to use. There was no colour, the graphics were poor and of low resolution. There was too much information on the screen during the introduction and the commands were difficult to use. It was felt that the presentation could be found boring and that the subject might be better taught through practical lessons. A depth of knowledge was needed and too many variables were adjustable at one time. It was thought to be for specialist use only.

Subgames.

The initial instructions were too complicated for young users and need clarifying. It is a program for practice and not teaching, and is limited to one operation and to use by
individuals.

Postman Pat.
This program was thought to be ill conceived with limited aims, and it was questioned whether the reorganisation of number sequences was appropriate for the target age range. The graphics were flickery and dated, and the numbers too small. The program was difficult to stop and was slow, with too much time spent on reward. The repetitive tune could be annoying and it was too easy to lose or crash the program.

Suggested improvements.

Autosum.
1) Improve the display, especially the shape of the numbers.
2) Give more feedback.
3) An option to freeze until the correct answer is given.
4) Add an option to allow answers to be typed in.

Box clever.
1) Remove the vertical lines from screen.
2) Make characters uniform.
3) Give rewards in form of sounds or flashing stars.
4) Speed up the program.
5) Improve the data base.
6) Remove the error which registers wrong to correct responses.
7) Provide some response when the wrong key is pressed.
Investigator.
1) Simplify presentation or provide user choice.
2) Provide a specimen run.
3) Speed up the search.
4) Give more explanation of screen output.
5) Give more on how to handle the statistics.
6) Write similar programs for other curriculum areas as it is rather impractical to follow up findings on road accidents.
7) Provide a set of worksheets.

Transverse waves.
1) Change to high resolution graphics and colour.
2) Have a split screen for showing user-friendly commands.
3) Provide a specimen run.
4) Provide more attractive documentation.
5) Provide a better explanation of the program.
6) Provide the facility to opt for different levels of difficulty.

Subgame.
1) Speed up display of the computer's answers.
2) Offer other arithmetic operations.
3) Give hints if failures are obvious.
4) Give an example on the screen of a large difference and a small difference.

Postman Pat.
1) Speed up the program or give a choice of speed.
2) Make the controls easier.
3) Shorten the reward sequence.
4) Change the white background to green to reduce glare.
5) Scrap it! (This was suggested by a considerable number of the group)

STAGE FIVE: An account of what actually happened in the institution arising from stage four.

The detailed criticisms of each computer program were duplicated for circulation to all participants to aid them in evaluating these and other programs for school usage.
This page merely separates the two investigations.
INVESTIGATION FOURTEEN
AN EVALUATION OF SOFTWARE STYLES

This review took place on the second day with the same group of teachers on the same M.Ed course.

STAGE ONE  The identification of the issue and the elements

The teachers assembled in one room for a review of software styles using the same approach as on the previous day. Again, because of shortage of time, the elements were provided, although an opportunity was provided to modify or add or delete from the list of elements.

The issue - Software styles

The elements:

a) Games
b) Drill and practice
c) Electronic blackboard
d) Information retrieval
e) Simulation
f) Data logging
g) Control
h) Word processing
i) Tutorial
j) Problem solving
k) Gaming

After discussion with the group of teachers, two further software styles were added -

l) Modelling
m) Diagnostic

STAGE TWO: The discovery of the various perspectives of those involved

Stage 2a. The identification of the constructs by which each element is to be evaluated.

A list of constructs which had resulted from a discussion
among course tutors was projected on a screen and the teachers were asked to reject, modify or amend any of these constructs.

The constructs (as provided by the course tutors)

I think that this software style could ......

a) support worthwhile activities that were previously very difficult.

b) encourage pupil/pupil discussion.

c) encourage pupil/teacher discussion.

d) encourage pupil hypothesis formation.

e) increase pupil on-task time.

f) facilitate curriculum integration.

g) extend the curriculum beyond its current boundaries.

h) facilitate worthwhile activities for high ability pupils.

i) facilitate worthwhile activities for low ability pupils.

(The implicit poles were discussed and included on the evaluation sheets.)

The teachers were then invited to consider these constructs as possible criteria by which the elements could be evaluated. They were also asked to reject, or modify those constructs they found inadequate, or inappropriate, and to add any of their own.

Stage 2b. The compilation and production of evaluation sheets

The resulting constructs were compiled into an evaluation sheet.
EVALUATION SHEET

Using a computer for: .................................................. (a software style)

I think that this software style could ........

1. support classroom activities that are likely to bring about learning... YES! Yes yes? no? No NO! (...not support....)
2. encourage pupil/pupil discussion. YES! Yes yes? no? No NO! (discourage......)
3. encourage pupil/teacher discussion ........
   YES! Yes yes? no? No NO! (discourage............)
4. encourage pupil hypothesis formation ......
   YES! Yes yes? no? No NO! (discourage ....)
5. optimise pupil on-task time .. YES! Yes yes? no? No NO!
   (decrease ........)
6. facilitate curriculum integration ..
   YES! Yes yes? no? No NO! (not facilitate...)
7. extend the curriculum beyond its current boundaries ...
   YES! Yes yes? no? No NO! (not facilitate..)
8. facilitate worthwhile activities for high ability pupils...
   YES! Yes yes? no? No NO! (not facilitate...)
9. facilitate worthwhile activities for low ability pupils
   YES! Yes yes? no? No NO! (not facilitate..)
10. increase teachers' confidence ... YES! Yes yes? no? No NO!
    (decrease ........)
11. support administrative tasks ..YES! Yes yes? no? No NO!
    (not support.....)
12. facilitate worthwhile activities for pupils with special needs..YES! Yes yes? no? No NO! (not facilitate.....)

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13. encourage follow up activities outside the classroom.

YES! Yes yes? no? No NO! (not encourage..)

14. extends a teacher's repertoire of teaching styles.

YES! Yes yes? no? No NO! (not extend....)

15. assist classroom management.. YES! Yes yes? no? No NO!

(not assist....)

Stage 2c. The completion by participants of an evaluation sheet for each element.

Evaluation sheets were printed for each teacher who completed them in the usual way for each element by ringing the response on each rating scale which the teacher thought most accurately reflected his/her attitude to that particular element.

Stage 2d. Transfer of data from evaluation sheets to grid matrices and analysis of half the data.

The teachers then scored their responses on rating scales (YES!:6, Yes:5, yes?:4, no?:3, No:2, NO!:1) and entered them in a grid matrix. The teachers were then divided into groups A and B. Teachers previously in group A were now in group B and vice versa. Group A subjected the data in their grid matrices to an HLA analysis and drew cluster 'trees' for elements and constructs from the resulting analysis. Group A had access to all this data before embarking on their deliberations. Group B had access to their evaluation sheets and grid matrices. Both group A and group B were asked, as a result of their deliberations, to identify strengths, weaknesses and suggested improvements in the software styles.
reviewed, following exactly the procedure used in investigation thirteen.

Results of the Software Styles Evaluation

Group A (Grid matrices completed and subjected to HLA after which construct and element trees were drawn)

<table>
<thead>
<tr>
<th>Initials of Participants</th>
<th>Number of Strengths</th>
<th>Number of Weaknesses</th>
<th>Number of Improvements</th>
</tr>
</thead>
<tbody>
<tr>
<td>JM/TD</td>
<td>2</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>EC/DA</td>
<td>2</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>MJ/BB</td>
<td>5</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>CT/MG</td>
<td>4</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>DHB/Y</td>
<td>4</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>JS/CP</td>
<td>8</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>AB/AR</td>
<td>4</td>
<td>2</td>
<td>0</td>
</tr>
</tbody>
</table>

Group B (NOT subjected to HLA analysis)

<table>
<thead>
<tr>
<th>Initials of Participants</th>
<th>Number of Strengths</th>
<th>Number of Weaknesses</th>
<th>Number of Improvements</th>
</tr>
</thead>
<tbody>
<tr>
<td>CC/DH</td>
<td>4</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>NC/RS</td>
<td>4</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>JR/DA</td>
<td>4</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>BF/AW</td>
<td>3</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>X/X</td>
<td>1</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>KM/X</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>DW/X</td>
<td>3</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

The low numbers in each table may be due to the fact that time was limited. Deliberations were rather hurried. On the other hand, 'software styles' was not an easy area to
appraise, and this could have contributed.

The **Mann-Whitney Test**

The null hypothesis is that differences between groups A and B are due to chance factors, that is, that the two samples in groups A and B are drawn from identical populations.

**Null hypothesis four**

'\text{That the differences between the number of strengths identified in group A and the number of strengths identified in group B are due to chance factors.}'

<table>
<thead>
<tr>
<th>Group A</th>
<th>Number of strengths</th>
<th>2</th>
<th>2</th>
<th>5</th>
<th>4</th>
<th>4</th>
<th>8</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rank order</td>
<td>3.5</td>
<td>3.5</td>
<td>13</td>
<td>9.5</td>
<td>9.5</td>
<td>14</td>
<td>9.5</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Group B</th>
<th>Number of strengths</th>
<th>4</th>
<th>4</th>
<th>4</th>
<th>3</th>
<th>1</th>
<th>1</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rank order</td>
<td>9.5</td>
<td>9.5</td>
<td>9.5</td>
<td>5.5</td>
<td>1.5</td>
<td>1.5</td>
<td>5.5</td>
<td></td>
</tr>
</tbody>
</table>

Now as both groups are the same size, T is the sum of ranks in sample A = 42.5

\[ U = NaNb + Na(Na+1)/2 - T \]

\[ U = 49 + 28 - 42.5 = 34.5 \]

\[ U' = NaNb - U \]

\[ U' = 49 - 34.5 = 14.5 \]

As \( U' \) is less than \( U \), look up \( U' \) in the Mann-Whitney Table. Table value for \( Na=7 \) and \( Nb=7 \) is 8. The observed value of 14.5 is not equal to or less than the table value, therefore the difference in scores under the two conditions is not significant.

Therefore there is no significant difference between the
number of strengths identified in group A and the number identified in group B.

Null Hypothesis Five
'That the differences between the number of weaknesses identified in group A and the number of weaknesses identified in group B are due to chance factors.'

Group A Number of weaknesses 1 1 4 2 2 6 2
Rank order 2 2 13 7 7 14 7

Group B Number of weaknesses 2 2 3 3 2 1 2
Rank order 7 7 11.5 11.5 7 2 7

Now as both groups are the same size, T is the sum of ranks in sample A = 53
U = NaNb + Na(Na+1)/2 − T
U = 49 + 28 − 53 = 24
U' = NaNb − U
U' = 49 − 24 = 25

As U is less than U', look up U in the Mann-Whitney Table. Table value for Na=7 and Nb=7 is 8. The observed value of 22 is not equal to or less than the table value, therefore the difference in scores under the two conditions is not significant.

Therefore there is no significant difference between the number of weaknesses identified in group A and the number identified in group B.
Null Hypothesis Six

'That the differences between the number of suggested improvements identified in group A and the number of suggested improvements identified in group B are due to chance factors.'

<table>
<thead>
<tr>
<th>Group A</th>
<th>Number of suggested improvements</th>
<th>2</th>
<th>0</th>
<th>5</th>
<th>1</th>
<th>4</th>
<th>2</th>
<th>0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rank order</td>
<td>10</td>
<td>3</td>
<td>13.5</td>
<td>7</td>
<td>12</td>
<td>10</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Group B</th>
<th>Number of suggested improvements</th>
<th>0</th>
<th>1</th>
<th>5</th>
<th>1</th>
<th>0</th>
<th>0</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rank order</td>
<td>3</td>
<td>7</td>
<td>13.5</td>
<td>7</td>
<td>3</td>
<td>3</td>
<td>10</td>
<td></td>
</tr>
</tbody>
</table>

Now as both groups are the same size, T is the sum of ranks in sample A = 46.5

\[ U = \frac{NaN_b + Na(Na+1)}{2} - T \]

\[ U = 49 + 28 - 46.5 = 30.5 \]

\[ U' = NaN_b - U \]

\[ U' = 49 - 30.5 = 18.5 \]

As \( U' \) is less than \( U \), look up \( U' \) in the Mann-Whitney Table. Table value for \( Na=7 \) and \( Nb=7 \) is 8. The observed value of 18.5 is not equal to or less than the table value, therefore the difference in scores under the two conditions is not significant.

Therefore there is no significant difference between the number of suggested improvements identified in group A and the number identified in group B.

Conclusion

The results of this investigation indicate no advantage in
having a deliberation based on data available from -
  a) completed evaluation sheets
  b) grid matrices
  c) element and construct trees derived from HLA
than from deliberation based on data available from
  a) completed evaluation sheets
  b) grid matrices.

STAGE FOUR Written summary of the deliberations

Software Styles.
The summary of the deliberations is given under the same
headings that were given to the students: strengths,
weaknesses and suggestions for improvement in relation to
software styles.

Strengths.
Good software was seen as beneficial, whatever the style. It
provides another learning resource in the classroom and can
extend the teachers repertoire of effective teaching styles.
It can generate enthusiasm and stimulate discussion between
teachers and pupils and between pupils. It can produce
results in tasks that would otherwise be tedious and
facilitate worthwhile activities for the whole ability range.
Software styles thought to be of particular value were
information retrieval, word processing and simulation. Data
logging, control and modelling were also thought to be
useful, and good quality diagnostic programs could be an
asset. An electronic blackboard could be useful, but only if it was easily available in the classroom.

Weaknesses.
A general weakness was the lack of hardware in schools. It was questioned whether any of these software styles would stimulate work outside the classroom, and it was felt that bad programs promote poor teaching methods. Drill and practice were not highly regarded and could be boring. There was doubt about the use of tutorial programs based on reproducing text books on the screen. Tutorial programs were seen as impersonal and isolating, and not cost effective in programming time. Games were seen as likely to warp the pupils' ideas of computer usage. The electronic blackboard was not highly regarded and the problems of moving equipment for only a few minutes was noted.

Suggested improvements.
1) Staff development is necessary so that teachers can be involved in software production and be able to evaluate and modify existing formats.
2) Word processing packages should be supplied with school computers.
3) Programs should be designed to meet actual teaching needs.
4) There is a great need for well evaluated software.
5) More advisers are needed to demonstrate software.
6) Inspection copies of software should be available.
7) There is a need for bigger machines so that tutorial and diagnostic programs can be improved.
8) There is a need for better diagnostic programs.
9) Effective use of the electronic blackboard entails several large VDUs within easy viewing of every pupil.
10) Drill, practice and gaming can be utilised to allow teachers more time to devote to other pupils, and the time saved by pupils can be used to apply basic skills.
11) There should be more programs which encourage links across subject areas.

STAGE FIVE An account of what happened arising from stage four

Copies of the summary of the deliberations were duplicated for circulation to all participants for reference purposes later in their course.

Comments arising investigation thirteen and fourteen

a) It is important to note the advances that this investigation provided. It has, until now, taken quite a lot of time to agree upon a list of elements and constructs. The use of word processing facilities and a set of VDUs visible to the participants proved an enormous advantage in shortening the time taken to arrive at an agreed set of elements and constructs. Many schools now have their own computer and hence this development could facilitate the use of the process in schools.

b) A lively discussion ensued as a result of arriving at the
agreed list of constructs and elements.

c) At the end of the two sessions, all the participants were asked to write a brief comment on their attitude to the use of HLA and the element and construct trees in the evaluation processes. About a third of the group felt that HLA and the construction of trees aided their deliberation, a further third did not and the remainder were undecided. Some of the comments are of particular interest. Several wrote that the process of constructing the trees had been personally useful. For example -

'HLA was useful personally to analyse my attitudes to computing but not so useful in discussing evaluation of individual programmes with a partner.'

'HLA was useful but not necessarily for the deliberation, more from a personal point of view.'

There was considerable interest by the teachers in their own trees. Most of those in the 'unanalysed' group on the second day insisted on analysing their data using HLA and drawing the trees after the deliberation, even though the process did not require this.

It is an important point to emphasise that much of the reported research using focused grids relates to the personal use of the focused data. (Pope, 1978) This is an obvious area to follow up and the author is at present involved in the initial stages of an evaluation package including HLA and other computer possibilities.

d) Another issue that arose during the weekend was the form of presenting the analysed data, that is, the element and
construct trees. The form adopted was similar to that used in previous research (see Pope 1978, Pope and Keen 1981) but there is a problem in that the peaks of 'high' trees can easily be mis-interpreted as indications of high match, rather than of low match. Various suggestions came from the group regarding the presentation of trees.

i) Colour banding - the different levels of match could be highlighted by bands of colour, or forms of shading, on the graph paper provided for drawing the trees.

ii) Varying thicknesses of line could be used at the different levels of match.

iii) A background of graded dots for the different levels of match could be used.

This is an important area to follow up.

e) The question remains whether greater familiarisation with HLA and the construction and presentation of the trees would lead to their usage having a greater influence on the deliberation. Other factors might bear upon this lack of influence of HLA on the deliberation. All groups, except those involved in these two investigations (thirteen and fourteen), had experience of HLA on one occasion only - and teachers in investigations thirteen and fourteen used it only twice and then with limited time. This might be an interesting area to explore further.
INVESTIGATION FIFTEEN
THIRD YEAR HONOURS B.ED INITIAL TEACHER TRAINING STUDENTS’ REVIEW OF THEIR FINAL TEACHING PRACTICE

On January 24th and 31st 1984, a group of third year B.Ed students met to evaluate teaching practice. A brief outline outline of personal construct theory and its possible application to curriculum evaluation was given. Nobody at this stage was told about HLA nor about drawing the cluster trees of elements and constructs.

STAGE ONE Identification of the issue and elements
Teaching practice had been chosen as the issue for review since this group students had just returned to college after their final practice and it would be fresh in their minds. A list of possible elements for a Teaching Practice review, elicited from a group of fourth year students, was written on the blackboard. The group was asked to consider whether these were elements of Teaching practice that were significant to them. They were also invited to adapt, delete or add elements.

List of elements provided from the previous year of students
My supervisor
My school
My classroom teacher
The assessment process
Length of practice
Attitude of school staff
Pre-practice contact with school
Extra-curricular activities

The list of elements agreed by this group of students after discussion
My TP supervisor
My TP school
My main teacher-in-charge
Length of final practice
Attitude of school staff
Pre-practice contact with my school
Extra-curricular activities
My previous teaching practice activities
The assessment process

STAGE TWO The discovery of the various perspectives of those involved
Stage 2a. Identification of the constructs by which each element is to be evaluated
The following constructs previously elicited from the fourth year students were displayed.
This element of Teaching practice ...
  a) helped to give me a satisfying experience.
  b) helped my professional development.
  c) helped me to develop good relationships with the pupils.
  d) helped me to develop my skills of classroom management.
  e) helped me to plan lessons that were appropriate for the pupils.
  f) helped me to develop good relationships with the teachers.
in my school.
g) enabled me to try out new methods
h) made me feel confident.

The students were then invited to consider these constructs as possible criteria by which the elements could be evaluated. They were asked to reject, modify and to add any of their own. Following a discussion it was agreed to retain all the constructs as presented and to add one more - ‘helped to influence my future career’
(The implicit poles were discussed and agreed. They appear on the evaluation sheets.)

Stage 2b. Compilation and production of evaluation sheets
While the students were having a coffee break, the constructs were compiled into an evaluation sheet and enough evaluation sheets photocopied for all the elements to be evaluated by each student.
An evaluation sheet follows.
EVALUATION SHEET

Teaching practice element ..............................................

This element of TP ......

a) helped to give me a satisfying experience.....
YES! Yes yes? no? No NO! (made this TP an unsatisfying experience)

b) helped my professional developmentYES! Yes yes? no? No NO!
(hindered my professional experience)

c) helped me to develop good relationships with the pupils.
YES! Yes yes? no? No NO!(did not help me to develop...)

d) helped me to develop my skills of classroom management.
YES! Yes yes? no? No NO!(did not help me...)

e) helped me to plan lessons that were appropriate for the pupils
YES! Yes yes? no? No NO!(did not help me..)

f) helped me to develop good relationships with the teachers in
my school YES! Yes yes? no? No NO! (hindered my relationships with the teachers in my school.)

g) enabled me to try out new methods YES! Yes yes? no? No NO!
(... discouraged me from trying out new methods.)

h) made me feel confident.YES! Yes yes? no? No NO!
(did nothing to aid my confidence.)

i) helped to influence my future career YES! Yes yes? no? No NO!
(did not influence my future career.)

Stage 2c Completion by participants of an evaluation sheets for each element

Evaluation sheets were completed by ringing the response on each rating scale which the student-teacher thought most
accurately reflected his/her attitude to that particular TP element.

Stage 2d. Transfer of data from evaluation sheets to grid matrices and analysis of half the data

The student-teachers then scored their responses on the rating scales (YES! : 6, Yes : 5, yes? : 4, no? : 3, No : 2, NOI : 1) and entered them in a grid matrix. The first session with the students ended at this point. The student-teachers were then divided into approximately equal groups A and B. The data from the grid matrices of group A were then analysed according to the HLA computer program and cluster trees drawn.

Stage Three Deliberation by all participants based on the perspectives revealed

- in group A by the completed evaluation sheets, grid matrices, HLA print-outs and constructs trees.
- in group B by the completed evaluation sheets and grid matrices.

The second session began by dividing the students into groups A and B. Group A was introduced to HLA and given their evaluation sheets, grid matrices, computer print-outs and element and construct trees. The group were then given the guidelines, as in investigation ten, for using their trees as a basis for deliberation in pairs. Out of their deliberations they were asked to list strengths and weaknesses in TP and to make recommendations for change.
Group B were also asked to deliberate in pairs but, in their case, this was based only on their evaluation sheets and grid matrices. Out of their deliberation in pairs, they were asked to identify strengths and weaknesses of TP and to make recommendations for change. The pairs in both groups were asked to continue with their deliberations until they thought they had exhausted the identification of strengths, weaknesses and recommendations for change.

Comparison of Group A and Group B summaries

Group A (Grid matrices subjected to HLA with element and construct cluster 'trees' drawn)

<table>
<thead>
<tr>
<th>Initials of Participants</th>
<th>Number of Strengths</th>
<th>Number of Weaknesses</th>
<th>Number of Recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td>BK/DS</td>
<td>3</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>SK/AM</td>
<td>4</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>MH/MM</td>
<td>6</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>TB/DH</td>
<td>3</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>GE/AW</td>
<td>5</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>JC/PA</td>
<td>4</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>MS/NA</td>
<td>3</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>LP/TS</td>
<td>3</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>KF/CH</td>
<td>3</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>
Group B (Grid matrices completed but NOT subjected to HLA)

<table>
<thead>
<tr>
<th>Participants</th>
<th>Number of Strengths</th>
<th>Number of Weaknesses</th>
<th>Number of Recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td>JJ/HR</td>
<td>4</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>GH/KP</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>JD/CE</td>
<td>5</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>DH/EN</td>
<td>4</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>EN/JH</td>
<td>4</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>JN/RF</td>
<td>9</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>MH/JG</td>
<td>3</td>
<td>3</td>
<td>5</td>
</tr>
</tbody>
</table>

The Mann-Whitney Test

The null hypothesis is that differences between groups A and B are due to chance factors, that is, that the two samples in groups A and B are drawn from identical populations.

Null Hypothesis One.

'That the differences between the number of strengths identified in group A and the number of strengths identified in group B are due to chance factors.'

Group A Number of strengths 3 4 6 3 5 4 3 3 3

Rank order 4 10 15 4 13.5 10 4 4 4

Group B Number of strengths 4 3 5 4 4 9 3

Rank order 10 4 13.5 10 10 16 4

The sum of ranks of the smaller sample is $T$ and is the sum of ranks in sample B = 67.5
\[ U = NaNb + Na(Na+1)/2 - T \]
\[ U = 63 + 28 - 67.5 = 23.5 \]
\[ U' = NaNb - U \]
\[ U' = 63 - 23.5 = 39.5 \]

As \( U \) is less than \( U' \), look up \( U \) in the Mann-Whitney Table. The observed value of 23.5 is not equal to or less than the table value, therefore the difference in scores under the two conditions is not significant.

Therefore there is no significant difference between the number of strengths identified in group A and the number identified in group B.

**Null Hypothesis Two**

'That the differences between the number of weaknesses identified in group A and the number of weaknesses identified in group B are due to chance factors.'

<table>
<thead>
<tr>
<th>Group A Number of weaknesses</th>
<th>3</th>
<th>6</th>
<th>4</th>
<th>1</th>
<th>4</th>
<th>1</th>
<th>5</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rank order</td>
<td>6</td>
<td>16</td>
<td>11</td>
<td>1.5</td>
<td>11</td>
<td>1.5</td>
<td>14.5</td>
<td>3</td>
<td>6</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Group B Number of weaknesses</th>
<th>5</th>
<th>3</th>
<th>4</th>
<th>4</th>
<th>4</th>
<th>3</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rank order</td>
<td>14.5</td>
<td>6</td>
<td>11</td>
<td>11</td>
<td>6</td>
<td>6</td>
<td>6</td>
</tr>
</tbody>
</table>

The sum of ranks of the smaller sample is \( T \) and is the sum of ranks in sample B = 65.5

\[ U = NaNb + Na(Na+1)/2 - T \]
\[ U = 63 + 28 - 65.5 = 25.5 \]
\[ U' = NaNb - U \]
\[ U' = 63 - 25.5 = 37.5 \]

As \( U \) is less than \( U' \), look up \( U \) in the Mann-Whitney Table.
Table value for $N_a=9$ and $N_b=7$ is 12. The observed value of 25.5 is not equal to or less than the table value, therefore the difference in scores under the two conditions is not significant. Therefore there is no significant difference between the number of weaknesses identified in group A and the number identified in group B.

**Null Hypothesis Three**

'That the differences between the number of recommendations identified in group A and the number of recommendations identified in group B are due to chance factors.'

<table>
<thead>
<tr>
<th>Group A</th>
<th>Number of recommendations</th>
<th>Rank order</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>5 5 6 5 4 4 4 5 4</td>
<td>12 12 16 12 5.5 5.5 5.5 12 5.5</td>
</tr>
<tr>
<td>Group B</td>
<td>Number of recommendations</td>
<td>Rank order</td>
</tr>
<tr>
<td></td>
<td>4 3 3 5 5 4 5</td>
<td>5.5 1.5 1.5 12 12 5.5 12</td>
</tr>
</tbody>
</table>

The sum of ranks of the smaller sample is $T$ and is the sum of ranks in sample $B = 50$

$U = N_a N_b + \frac{N_a (N_a + 1)}{2} - T$

$U = 63 + 28 - 50 = 41$

$U' = N_a N_b - U$

$U' = 63 - 41 = 22$

As $U'$ is less than $U$, look up $U'$ in the Mann-Whitney Table. Table value for $N_a=9$ and $N_b=7$ is 12. The observed value of 22 is not equal to or less than the table value, therefore the difference in scores under the two conditions is
not significant. Therefore there is no significant difference between the
number of recommendations for change identified in group A
compared with numbers identified in group B.

Conclusion
The results of this investigation finds no advantage in
having a deliberation based on data available from -
   a) completed evaluation sheets
   b) grid matrices
   c) element and construct trees derived from HLA
rather than a deliberation based on data available from
   a) completed evaluation sheets
   b) grid matrices.

STAGE FOUR  Summary of deliberations
The summary is given under the headings that were given to
the students.

Strengths
A good working relationship with a supervisor who visited
regularly, was sensitive to the student's needs, and was aware
of the nature of the school and its environment, built up
confidence. Criticism that was constructive was appreciated.
Support from the school staff was invaluable. The teachers'
knowledge of the school and pupils could be very helpful, as
were teachers who allowed experimentation and offered
constructive criticism. It was a great asset to be in a
school where the teachers empathised with the problems of
being a student.
A long practice allowed a student to become an integral part of the school. The cumulative experiences of previous practices helped the student on his/her final practice. Extra-curricular activities were seen as valuable in giving informal contact with staff and pupils. Teaching practice was seen as essential to professional development, enabling students to pinpoint their own strengths and weaknesses and reinforcing subject knowledge through teaching it to others.

Weaknesses
The supervisor's role as assessor may conflict with the helping role and the supervisor's early impressions of the student can influence the whole practice. A mismatch between the supervisor's expectations and those of the school staff can be a problem, as can a supervisor who does not relate well to the school staff. Another weakness was seen as having a supervisor without recent experience in schools and knowledge of certain teaching skills. Concern was also expressed about supervisors who had not had enough pre-practice contact with the school and students being allocated supervisors who had not taught them. Criticism that was not constructive was particularly disliked. Poor selection of teaching practice schools could lead to a student being in a school without the facilities and resources stressed at college. The type of school in which a student was placed could adversely affect the student's
assessment. Some teachers-in-charge were unhelpful and sometimes students were not able to plan appropriate lessons because of constraints imposed by teachers. Some felt that the final teaching practice was too short and that the timing of the start was inappropriate. It was thought that a single pre-practice visit was inadequate and that more pre-practice involvement was necessary if the maximum benefit was to be gained from teaching practice. Students were sometimes overloaded with teaching commitments and extra curricular activities could detract from a student's preparation time. Assessment was seen as a continual pressure and prevented teaching practice from being a learning situation. The presence of the supervisor in the classroom could result in the student behaving differently because of the strain. There was also concern about the apparently subjective nature of the assessment and the influence that the practice school might have. Too much emphasis could be put on the teaching practice file

Recommendations

1) Organise supervision visits for a whole morning or afternoon (as in Urban Studies Centre).
2) Hold informal assessment meetings between supervisors, teachers and students.
3) Supervisors should have a good knowledge of and good relationships with the school in which their students are on teaching practice.
4) Students should be able to choose their own supervisor.
Alternatively, they could have two supervisors, the first chosen by the college and the second by the student. The first supervisor would make an assessment part-way through the practice. The second supervisor would then visit to agree or negotiate the final grade.

5) Students should have the opportunity to develop a good relationship with their supervisor before the practice starts.

6) Supervisors should pinpoint students’ weakest areas and offer constructive criticism.

7) Supervisors should participate in class activities to make the situation less formal.

8) Supervisors should see a wide variety of lessons taught by their students.

9) Where there is a community placement it should be in a block, just previous to teaching practice, to give the student an understanding of the catchment area of his/her school.

10) Living near to the teaching practice school would help students to understand their pupils’ backgrounds.

11) Feedback from the second teaching practice could help in deciding a student’s final teaching practice school.

12) College should ensure that students are only placed in schools with adequate facilities.

13) The student should not be left alone in the class until the situation is likely to be satisfactory for the student and the pupils.
14) A School profile should be made available by the school to both students and supervisors.
15) College should have regular liaison with teaching practice schools to discuss changing curriculum patterns and teaching methods.
16) Final teaching practice should be for a whole term (This would mean that the student was regarded as more a member of staff by the pupils).
17) Teaching practice should start at the beginning of the school term.
18) Students' teaching loads should be reduced to allow more time for preparation.
19) The student should be allowed a longer period in the school before assessment begins.
20) The number of pre-practice visits with expenses should be increased.
21) There should be a gradual introduction into the final teaching practice school, for example, one day a week in the previous term.
22) Students should visit their schools for the two days prior to their teaching practice to enable the timetable and other arrangements to be finalised before they start teaching.
23) More time should be spent in schools throughout the B.Ed course.
24) The second teaching practice should be tougher so that problems are identified before the final teaching practice.
25) 1st and 2nd year curriculum courses should be more
demanding to ensure that students are good in curriculum areas before teaching practice rather than waiting for teaching practice to learn.

26) The value of extra curricular activities should be stressed by the college.

27) Assessment check lists should be used early in the practice as a guide to the student about his/her performance.

28) Assessment should be on a pass/fail basis.

29) The assessment procedure should take the nature of the teaching practice school into consideration.

30) School and teacher reports should carry more weight in the final assessment.

31) Students should be allowed to choose the topic to teach in the presence of an external examiner.

32) Teaching practice should allow students the opportunity to try out new ideas.

Comments on investigation fifteen

The group were enthusiastic about the opportunity to evaluate teaching practice. They felt that student perspectives were sometimes ignored and that at other times students were unwilling to express their ideas because they were being assessed. As teaching practice is a common experience to all B.Ed. students it had been decided to present them with the list of elements elicited from the previous years' students. After discussion these were accepted with minor alterations to the wording of some and
the addition of one new element. The previous year's constructs were also accepted with the addition of one new construct.

As with the fourth year B.Ed. students some students had initial problems in understanding the printouts and cluster trees. (Unfortunately the time available with this group did not allow them to draw up their own trees which had proved to be a useful exercise in investigations 13 and 14). It was obvious, however, that more of the students had had experience with computers and this was reflected in the attention they gave to the print-outs as well as the cluster trees. There were also several requests from students in Group B that their data should be subjected to H.L.A. for personal interest.

The involvement at the deliberation stage was high in both groups. There was no significant difference between the number of strengths, weaknesses or recommendations for change identified by the two groups. So in this investigation there is no evidence that perspectives revealed by the construct trees led to a more useful deliberation. In the discussion after the completion of the process both groups stressed the value of comparing similarities and differences in perspective as a basis for deliberation, whether these were revealed by comparing evaluation sheets or construct and element trees.

In general there was a favourable attitude to the curriculum evaluation process. The students had appreciated the opportunity to express their views and to listen to those
of others. They were almost surprised at how free they had been in their deliberations. They hoped that there would be some response from the College to the recommendations they had made.

Those who had been in schools where check lists were being used were favourably disposed to the process. They said they saw a distinct advantage in having a process in which the issues and criteria for judging those issues were decided by those carrying out the review. The exercise had been a particularly creative one in terms of the number of recommendations put forward for the College to consider.
CONCLUSIONS FROM INVESTIGATIONS TEN TO FIFTEEN.

Summary of Results of Investigations 10 to 15.

Investigation 10
Strengths
The difference in scores under the two conditions was significant at 5% level.
Weaknesses
The difference in scores under the two conditions was not significant.
Recommendations for change
The difference in scores under the two conditions was not significant.

Investigation 11
Strengths
The difference in scores under the two conditions was significant at 5% level.
Weaknesses
The difference in scores under the two conditions was not significant.
Recommendations for change
The difference in scores under the two conditions was not significant.

Investigation 12
Insufficient data for statistical analysis
Investigation 13
Strengths
The difference in scores under the two conditions was not significant.
Weaknesses
The difference in scores under the two conditions was not significant.
Recommendations for change
The difference in scores under the two conditions was not significant.

Investigation 14
Strengths
The difference in scores under the two conditions was not significant.
Weaknesses
The difference in scores under the two conditions was not significant.
Recommendations for change
The difference in scores under the two conditions was not significant.

Investigation 15
Strengths
The difference in scores under the two conditions was not significant.
Weaknesses
The difference in scores under the two conditions was not significant.
Recommendations for change
The difference in scores under the two conditions was not significant.

The results of these investigations do not indicate that a statistical analysis, in the form of HLA, in the curriculum evaluation process adds to its usefulness, when usefulness is measured by the number of strengths, weaknesses and recommendations for change generated by the participants. On only two occasions did the Mann-Whitney test used show a significant difference at 5% level between the two groups. This related to the number of strengths identified in Investigations 10 and 11. In both cases more strengths were identified by Group B (grid matrices not subjected to H.L.A. analysis). In fact, in investigations 10 and 11, the mean numbers of strengths, weaknesses and recommendations for change was always greater in Group B than in Group A. These findings reinforce early impressions gained by the author and the comments of the participants that it was the opportunity to compare perspectives revealed by the evaluation sheets that was valuable in facilitating deliberation. The presence or absence of element and construct cluster trees seemed to be relatively unimportant. But various factors must be considered that may have led to the apparent lack of impact on the deliberation of the availability of the cluster trees.

Limitations of the research method

1) The lack of experience with computer data by those involved in the investigations may have hindered their use of the feedback in the form of element and construct trees. Although, investigations 13 and 14 did contain a large
Although, investigations 13 and 14 did contain a large majority of those with experience of computer usage. If the value of the feedback was increased with experience it would have been expected that these participants would show some effects of learning and perhaps some learning did take place. Group A produced more responses than group B, although the difference in scores between the two groups was not significant. (Group A - 61 responses; Group B - 44 responses)

2) The instructions for use of the element and construct trees could have been inadequate. The instructions given were based on those used by Pope (1978). In general there seemed to be little difficulty experienced in understanding the instructions. Where difficulties did arise these were dealt with on a personal basis to the apparent satisfaction of the participants.

3) The form of the feedback could be criticised, in particular the problem that peaks of 'high' element and construct trees could be interpreted as high match instead of what they are, which is low match. Various suggestions were made by the participants of investigations 13 and 14 for ways of improving the feedback. For example,

(a) colour banding to indicate levels of match.

(b) using various thicknesses of line to indicate levels of match.

(c) using graded dot paper to indicate levels of match.

Involving the participants in investigations 13 and 14 in the drawing of their own element and construct trees was found
to be useful in sensitising them to the clusters arising from the H.L.A. analysis. However, there was no significant differences in the number of strengths, weaknesses and recommendations for change generated by groups A and B in these investigations.

4) The sort of feedback provided may be more valuable in private rather than public use. A considerable number of participants commented on the personal relevance of the element and construct trees. They felt that they might be useful for the private exploration of personal perspectives. The author is at present in the initial stages of planning an evaluation package including H.L.A. for personal use.

5) The time allowed for deliberation appeared to be an important factor in all the investigations in both this, and the previous chapter. Although deliberating pairs were encouraged to continue until they felt they had identified all strengths, weaknesses and recommendations for change, a tiredness factor might have affected Group A; attempting to interpret the element and construct trees was a long process.

6) The number of strengths, weaknesses and recommendations for change arising from a deliberation might be an inadequate measure of the usefulness of deliberation. Other ways of measuring the usefulness of deliberations, such as attempts to make qualitative evaluations of the deliberations using independent judges, failed.
Comments arising from investigations 11-15 relating to aim two of this thesis

The intention of the investigations described in this chapter was not only to explore aim 3 (to investigate whether a statistical analysis in the curriculum evaluation process added to its usefulness) but to continue the exploration of aim 2 (to investigate that process in a range of educational settings). Therefore comments and findings relating to the process in general, and not just the statistical analysis, are relevant at this point in the thesis.

1) As with investigations one to nine there was a general feeling that the proposed evaluation process had been a worthwhile experience and warranted more time spent on it.

2) The structured nature of the proposed process was appreciated, the eliciting of constructs was seen as a particularly significant stage and it was felt that the use of the rating scale

   YES! Yes yes? no? No NO!

had encouraged participants to commit themselves.

3) The deliberation stage was highly rated and the opportunity to express opinions and to listen to those of others was appreciated.

4) The proposed curriculum evaluation process was seen by many of the teachers involved in the investigations as an appropriate mechanism for reviewing the school curriculum. Some teachers, for example a remedial mathematics teacher in Plymouth, have used the process in their own schools.
Factors contributing to the success or failure of the proposed curriculum evaluation process.

1) The issue chosen for review must be seen as a salient one by participants.

2) It is important to recognise that evaluation is a time-consuming process. The deliberations in investigation 14 may have suffered because of lack of time.

3) The role of the external agent in explaining the process, giving advice on the various stages, compiling and printing the evaluation sheets, subjecting the data to H.L.A. and drawing up the element and construct trees, was an important one.

4) Deliberation in pairs maximised participation.

5) The use of word processing and printing facilities, and a set of VDUs visible to the participants, proved an enormous advantage in shortening the time taken to produce the evaluation sheets. However, it must be stressed that the process of arriving at the agreed elements and constructs should not be hurried since that, in itself, can be a valuable learning experience. Many schools now have their own computer and this could facilitate the use of the process in schools. This is being explored by the author.
CHAPTER NINE

SUMMARY AND RECOMMENDATIONS

This thesis began with a discussion about the concern for quality in English education and the resulting pressure on educational institutions to evaluate their curricula as a matter of normal professional practice. If appropriate change is to occur, commitment, on the part of those who are to implement it, is required. The history of recent large scale curriculum projects suggests that commitment is more likely to be achieved when the implementers participate and have a significant control in the process. But the process must have credibility and audited self-evaluation is seen as offering an acceptable level of credibility.

The approach taken in the proposed curriculum evaluation process reflects the nature of curriculum problems. Curriculum problems are practical, uncertain ones. They have to be answered in one way or another, taking the existing context into account, and nothing can tell infallibly what the right answer is. The method of the practical, according to Schwab, is deliberation and therefore the approach taken in the proposed curriculum evaluation process is a deliberative one. That is, an approach which identifies the issue(s), seeks to discover the perspectives of those involved, generates a range of possible solutions, and leads to a decision as to what solution might be the most appropriate for that context.

In 1976, the author developed an evaluation process based on
personal construct theory and the related repertory grid methodology. He found this process encouraged active participation, together with the identification and exploration of the perspectives of those involved. The experience gained in this research encouraged the author to investigate whether personal construct theory and repertory grid methodology might assist in the design and development of a curriculum evaluation process for use in a wider range of educational settings.

Possible limitations operating during the research.

A. One of the main limitations present in many of the investigations was the lack of time to spend on some of the stages in the curriculum evaluation process. For example, several times participants commented on having insufficient time at the deliberation stage. The use of a computer with a word processing facility was shown to reduce the time needed for producing the evaluation sheets. If these facilities are available this saving might allow more time at the deliberation stage.

B. The apparent failure of the deliberating pairs to benefit from access to the focused grids may have been influenced by lack of experience with computer data. If a longer induction period devoted to familiarising participants with the nature of element and construct trees had been included some advantage in this statistical process may have been found.

C. The instructions for the use of the element and
construct trees could have been inadequate. However, they were based on those used by Pope (1978) and the participants reported little difficulty in understanding them.

D. The form of the feedback from the focused grids was subject to much discussion. In particular, the tendency to initially perceive 'high' element and construct trees as representing high levels of match instead of what they are; a low match. Various suggestions for improving the feedback were made by the participants in Investigations 13 and 14. These included colour banding, various thicknesses of line and graded dot paper. Inviting participants to draw their own trees was also seen as potentially useful.

E. The groups using the extended curriculum evaluation process may have been more tired than other groups. But if time is limited, as is likely in most institutional-based evaluations, it might be better spent in deliberating on the data in the evaluation sheets, rather than dealing with the feedback from the focused grids.

F. The choice of numbers of strengths, weaknesses and recommendations for change may have been too insensitive as a measure of the usefulness of a deliberation. Nevertheless, it was argued in Chapter 8 that the decision to use these measures was based on the belief that the usefulness of a deliberation is related to the numbers of perspectives revealed and possible solutions generated.
The aims of this thesis

The aims of the thesis were threefold.

1. To examine whether personal construct theory might assist in the design of a curriculum evaluation process.
2. To investigate that process in a wide range of educational settings.
3. To investigate whether a statistical analysis in the curriculum evaluation process adds to its usefulness.

The extent to which these aims were achieved is now discussed.

Aim 1

To examine whether personal construct theory might assist in the design of a curriculum evaluation process.

The author found it possible to design a curriculum evaluation process that was based on the eliciting of elements and constructs, and the assigning of the elements within the constructs. This process is described in chapter seven and investigated in nine educational settings. An extended form of the process, which includes a statistical analysis of the relationships between elements and constructs, is presented in chapter eight and investigated in six educational settings.

Hence personal construct theory did assist in the design of a curriculum evaluation process.
Aims 2

To investigate the proposed curriculum evaluation process in a wide range of educational settings.

Accounts of fifteen investigations are given in chapter seven and chapter eight. In thirteen of these the process is carried through to completion. Analysis of these investigations shows that the process did support a deliberative approach. Individual perspectives are revealed and, on the basis of these, problems are identified and possible solutions generated in the form of recommendations. The investigations in which the outcomes of recommendations are reported show that the process is capable of facilitating appropriate remedies. In most investigations the process evoked a high degree of participation. Those involved reported their appreciation of the structure that the process provided. The conviction that deliberation groups need to be small so that everyone can participate is reinforced throughout. Time is probably the most expensive resource used by the process; this is particularly important at the explanation, elicitation and deliberative stages. If LEAs want schools to effectively review their curricula then adequate time must be given, although certain parts of the process can be accelerated with the use of word processing facilities. An external agent, such as a college lecturer, can assist the process by drawing on college resources to support a review. Support from those within the institution, responsible for the area being reviewed, is necessary for the
successful completion of the process.

The process can be operated totally by those within the institution or by inspectors appointed from outside the institution. However, if an audited self-evaluation is preferred, the process permits this too.

**Aim 3**

To investigate whether a statistical analysis in the curriculum evaluation process adds to its usefulness.

The summary of the results of investigations 10 to 15 show that in no case did the statistical analysis of the data from the evaluation sheets add to the usefulness of the deliberation as assessed by the numbers of strengths, weaknesses and recommendations for change identified by the participants. These findings support the impression gained by the author as early as his second piece of research based on a teaching practice (described in Chapter 6) that the examination of similarities and differences in perspectives, revealed by the comparison of evaluation sheets alone, provoked a useful deliberation. While not denying the probable value of statistically analysed feedback in other situations the author proposes that, in the sorts of curriculum review investigated in this thesis, there is no advantage in providing feedback in the form of focused grids.
General conclusion to aim three

Although certain criticisms can be leveled at the design of Investigations 11 - 15, it is argued that a considerable advantage needs to accrue from the use of H.L.A. to justify the extra time and resources necessary for this sort of analysis. The general conclusion is that the curriculum evaluation process in its unextended form provided a useful enough deliberation in the contexts in which it was investigated.

As already noted, the findings of Investigations 11 - 15 do not negate the possible value of feedback in the form of focused grids to individuals exploring their own meaning systems. But they do throw doubt on the advantage of this approach within the context of the evaluations investigated in this thesis. Participants' comments about the personal relevance of the element and construct trees have been noted and a computer aided evaluation package is currently being planned, including H.L.A. and a revised form of visual feedback.

Recommendations.

1) In order to maintain and improve the quality of education, teaching staff should be actively involved in the evaluation of the curriculum of their institution.

2) Policy decisions must be taken by those involved in curriculum review concerning access to, and release of, data emerging from an evaluation.

3) An audited form of self-evaluation is recommended. The
credibility of self-review is probably thereby enhanced.

4) Those embarking on curriculum review and their LEAs (or other funding bodies) must recognise that it is a demanding and time-consuming process. The appropriate resources must be allocated.

5) Deliberation should be an integral part of curriculum evaluation. The curriculum evaluation process proposed in this thesis is recommended as offering a deliberative approach.

6) To attain maximum participation in the curriculum evaluation process attention must be paid to familiarising participants with the stages of the proposed process, and to the size of groups.

7) Until less costly forms of disseminating the proposed process are available, an external agent, such as a college of education lecturer, can provide advice and guidance on the operation of the process.

8) Appropriate forms of disseminating the proposed process must be explored including the documentation of illustrative case studies.

9) Work should be continued on the two computer-aided learning packs; one using word processing and printing facilities to produce evaluation sheets in a quicker way; the other to adapt HLA so that teachers might explore the quality of their teaching in a private and personal way.

10) The use of the proposed process in situations other than educational ones should be explored.
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A full account of each Faculty's deliberations were written and submitted to the teachers involved. When it was agreed that the document contained a fair reflection of what was said, a paper was written and submitted to the School's staff as a whole. A separate paper was written by the Headteacher giving an account of his views of what had been reported.

The following reports the full and agreed account of the three faculties. It is a direct quote from the document agreed by the staff of the school.

A. CREATIVE ARTS FACULTY
The Creative Arts Faculty comprises the departments of Art, Woodwork, Home Economics, Needlework, Technical Drawing, P.E. and Child Care. All departments except Child Care teach across the age range first to fifth year. The P.E. department teach their subject only as a non-examination subject, whilst all the other departments teach their subjects with a view to all pupils taking CSE at the end of the fifth year, pupils having chosen those subjects under the option system at the end of the third year.

With such a range of individual subjects the group decided, where possible, to reach a consensus rather than to itemise in their report each individual departmental response. Across the years one to five, it was agreed that all...
departments provide a stable atmosphere and that pupils can identify and develop their particular abilities. Pupils are able to develop self confidence, self esteem, resourcefulness and initiative, and the skills of co-operation and communication. Opportunities are provided for learning through experience, and there is a good balance between practical and intellectual activities.

Woodwork, Home Economics, Needlework and Technical Drawing all provide opportunities for, and encourage the use of, numeracy and mathematical skills, and develop skills in the use of machinery and technology.

It was agreed that the Faculty develops pupils' moral sensitivity, with the Art and Child Care departments making a considerable and particular contribution. Pupils are encouraged and given opportunities to develop skill and sensitivity in interpersonal relationships.

Only in Technical Drawing, by the drawing of plans and consideration of town and country planning, is anything undertaken that will enhance pupils' understanding of society or their political competence. It was agreed that citizenship skills are developed in a wide sense in all departments, particularly by Art and Child Care, but it was noted that the previous timetabled space for 'citizenship' has been dropped.

Of major concern to all staff in the school, and particularly highlighted in the discussions of the Creative Arts and Humanities Faculties, is the massive rise in unemployment which, even if it subsequently becomes reduced, will,
nevertheless, still remain at such a level that many pupils
on leaving school will not get a job.
Is the traditional 'work ethic' approach any longer relevant?
Even now, as the result of low employment prospects,
disillusionment and questioning is growing among school-leavers as to the point of working for C.S.E., since passing exams seems to have little result or much impact on the chance of getting a job. Are teachers being honest in their strategy of using exams as a 'carrot' to motivate pupils, and should it continue? Will the disillusionment creep down the school?
A school can either anticipate change in society, and sometimes get it wrong, or it can follow and respond to change, but by its very nature, a school can only react with alterations to its curriculum with a time-lag of one or two or even three years.
The Creative Arts Faculty considers itself particularly responsible for providing training and skills to give self-respect and self-fulfillment, separate from employment, and it makes pupils aware of the formal and informal opportunities to develop these skills beyond sixteen into adult life.
In Woodwork and Art, CSE results, compared with proven practical ability, are of lesser significance in gaining employment or a place in further education. For example, the College of Art, Plymouth awards entrance places on work produced and before CSE results are published, and in
Woodwork, some employers ask to see pupils' work and set their own test, disregarding CSE. (It is interesting, and perhaps significant, that the Creative Arts Faculty alone made not one complaint of constraints imposed by the CSE). In the Creative Arts Faculty, there is taught a set of skills which are not necessarily achieved for the sake of passing an exam, but are skills that are acquired for life, e.g. woodwork, cookery, needlwork. (Is this an indictment of other subjects?)

The constraints which may inhibit the development of adult skills are minimised in the activities of the P.E. Department, and pupils are given the opportunity to respond and adapt to situations they are likely to meet in adult life.

All but one member of the Faculty welcomed and supported the general move away from competitiveness and agreed that cooperation was more important. It was felt important that pupils should be encouraged to learn from each other, and be judged on the basis of their own achievements and merit, rather than in comparison with others. This point has connotations outside the gym and beyond the playing field, and has important bearings on the whole examination system. The Creative Arts Faculty found it difficult to judge the curriculum as a whole as individual teachers tend to judge on the basis of their own subject because that is all they see. However, they considered the following as being positively achieved:

1) Language is being developed effectively and measurably

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ii) Pupils are given an understanding of society.

iii) Links between home and school are very good and better than in most schools.

iv) There is a stable atmosphere and a recognised policy on discipline.

v) There are links with outside agencies.

vi) Pupils are able to develop self confidence, resourcefulness and initiative.

vii) Communication and co-operation skills are developed.

viii) There is a balance between practical and academic skills.

ix) The majority of pupils show initiative.

x) Opportunities are given for pupils to learn through experience particularly in practical subjects.

The Creative Arts Faculty, however, felt that improvements and change should be worked for in the following areas of the curriculum:

i) Pupils are not learning the skills they need, to contribute effectively to society.

ii) Changes in society make changes in the curriculum essential.

iii) In this changing world, is the right sort of maths being taught?

iv) Development of moral sensitivity is met with varying degrees of success.

v) There is not enough emphasis on 'learning to learn'.
vi) Very little use is made of machinery and technology.

vii) Pupils are not given enough opportunities to respond and adapt to situations they are likely to meet in adult life.

In conclusion, the group agreed that this discussion and exchange of ideas had been most valuable.

B. HUMANITIES FACULTY

The Humanities Faculty is made up of the departments of English, French, History/Geography, Music, Religious Education, Remedial and Careers.

All departments agreed that they contribute to the development of the skills and knowledge necessary for making a full contribution to society through the many opportunities provided for discussion, and by the exchange of views between pupil and staff in all subject areas.

The consideration of whether the curriculum enables pupils to develop moral sensitivity produced heated argument. The R.E. department felt that this area is one of its particular strengths ("R.E. is moral issues"), and the History department felt that it, too, covers moral issues. However, others questioned whether merely by providing opportunities for pupils to consider moral issues this actually enabled pupils to develop moral sensitivity. It was finally agreed that it was probably the definition of 'enables' which was in dispute.

The whole Faculty agreed that links between home and school are fostered through the intensive report and interview system, the Active Tutorial work programme and through
parents evenings. Opportunities for parents to come into school have been greatly improved in recent years, and the English Department, particularly, felt this would continue to be a 'growth area'.

It was generally agreed that there is a good balance between academic and practical work, E.G. in Religious Education and Geography, pupils draw maps etc. The French department said that learning a language is always 'academic' even in its practical activities, but others offered the view that the French department has a very good record in the variety of means it uses to practise the language and that this could be seen as practical.

The History/Geography department considered that it contributes strongly towards equipping pupils to use Maths effectively, but the English and French departments felt they offer little of real mathematical value.

The development of self-confidence, tolerance, and self esteem is seen to be positively encouraged through the Active Tutorial work programme, and through the hidden curriculum, and the Religious Education department felt that this area was one of its major strengths. However, it was felt by some that although we can and do encourage co-operation and tolerance within subject areas, this has little real effect on pupils in the playground and on leaving school. Most members agreed that the subject areas provide disciplines that the pupils respond to, and which enable them to respond to disciplines which they meet in working life, but the
English department was less happy with this idea, feeling that the disciplines inherent in subject areas provide little to meet the needs of those who face unemployment, and that there is a need for wider consideration of what are the real skills needed in order to truly embrace "adult life".

Discussion took place on what was seen as a failure to fully realise the development of resourcefulness and initiative. The opportunities are provided and are felt to be successful, in that pupils are seen to be resourceful and demonstrate initiative, but their failure lay in communicating these aspects to outsiders. The need was seen for some large scale project such as a school-based Young Enterprise Scheme or the building of an adventure playground to encourage communication of pupils both with each other and with outside agencies. It was also suggested that the return of the Activities Week in some form would be beneficial. Pupils are encouraged to identify and develop their particular abilities within the subjects studied, but this was felt by some to be rather limited when looking at the wider implications of skills for working and adult life. The English department said that plenty of opportunity is given to the pupils to talk and write about their particular abilities, but wondered if this is enough. Further, the department felt that providing opportunities to learn through experience, and to respond and adapt to situations they may meet in adult life, are provided in their subject only at "second hand", mostly through a study of literature and, potentially more successfully, through drama improvisation.
However, as education is provided within the artificial setting of the classroom, it was felt that little more could be achieved.

The Careers department considered that some pupils are not being equipped to use language effectively. Although the Careers Programme has built into it all the possible forms of formal contact, e.g. interviews, complaints procedure, exploration of tasks, etc., there is a difference of expectation outside and inside the school. The school experience is not realistic enough, with the result that pupils are failing to talk to employers successfully. In contrast, the Woodland Fort experience is seen to be more successful. In all subject areas, the use of role play is seen as an emerging positive means of fulfilling many school aims.

All departments to whom it is applicable, provide guidance for new staff in their policy documents and guidelines. The English department hold frequent department meetings, and by the deep levels of communication reached, felt that this is particularly and genuinely beneficial in guiding new staff.

All departments were very unhappy about the lack of resources with which to develop the pupils' skills in the use of machinery and the understanding of technology, although the History department felt it could do much by devising its own materials. The English department needs a minimum of six two-way cassette recorders, video and video camera, typewriters and off-set litho plus a fully operational drama
In years one to three, the History and Religious Education departments respond to pupils' use of language by marking not only historical and R.E. content, but also spelling and grammar, and considered that they are making a contribution to equipping pupils to use language effectively, but the overall effectiveness of this was doubted by the English department, bearing in mind 'Language Across the Curriculum' policy. The English department were pleased with the progress they are making in providing ways of measuring the effective use of language in years one to three, and the success of the reading policy in the lower school was seen as a positive response in helping pupils become aware of the informal opportunities to develop skills for adult life.

In considering the development of the understanding of society in years one to three, the History department thought that it contributed by its study of the development and function of society. The French department queried whether it should be part of its role, although it does make a contribution to the understanding of the nature of French society. The definition of "responding to changes in society" bemused some, but the History department considered it provides as full a background to changes in society as time allowed, and that its syllabus is constantly updated in response to change. Links with outside agencies in years one to three are strongly developed by the English department through drama in and out of school, and the History/Geography department develop those links by, for example, requiring
pupils to use libraries to obtain information. The linear nature of learning a foreign language was seen by the French department to force the emphasis of its study into acquisition of facts, rather than emphasising 'learning to learn'. On the other hand, the topic-based approach of the History and Religious Education departments provide a good basis for learning to learn.

In considering the teaching of the fourth and fifth year exam pupils, there was some evident dissatisfaction. The Religious Education department felt that it is a weakness of its own exam syllabus that it does not include the study of inter-personal relationships, but otherwise the department was successfully meeting most of the schools aims. Others were less happy than this, feeling that having to permanently cope with CSE demands is a limiting factor. Apart from History/Geography and Religious Education, the emphasis has to be on fact acquisition rather than learning to learn. It was also considered that much of what had been achieved in the lower school in the development of personal skills, self esteem, self confidence etc. gets "knocked on the head" by examination constraints particularly by pupils achieving only average grades.

The exams were seen to mean little outside school, particularly at a time of rising unemployment, and given that CSE grades seem to mean little to employers. The only real value of the examination system seems to be that prospective employers saw it as a discipline that taught people how to
work, but that the choice of employee is made on other
criteria.
Many departments would have preferred to develop mode three
CSE courses, particularly the French department, but though
in view of the proposed 16+ exam and the length of time the
school would remain open, this was not feasible.
The English department considered that even those pupils who
achieve CSE grade one in literature and language are not
fully prepared to take up A level study.
Some felt that nothing of real value is offered to encourage
the development of skills that will aid pupils to control and
enhance their environment, but the History/Geography and
Religious Education departments disagreed and considered that
their subjects make a large contribution.
With the exception of the Careers department, the rest felt
they offer little or nothing to an integrated liaison
programme with industry and further education. In
considering the curriculum for non-exam pupils in the fourth
and fifth years, both the Religious Education and English
departments felt they have particular strengths in teaching
these groups. The History/Geography departments recognised
that their course which is new and still in the experimental
stage, did not meet their school aims effectively enough.
Weaknesses had been highlighted and improvements had been
made.
It was generally agreed that the curriculum as a whole does
its job well, as subjects complement each other, and any
weaknesses or gaps in one subject are generally compensated
for in another. It was suggested, however, that this is what we hope is happening, rather than what we actually know, because there is not enough understanding and communication between different subject areas. The curriculum coordinating committee was seen to be a very positive asset, but it is not sufficient. Areas for integrated teaching should be looked into.

All departments agreed that a very stable atmosphere is provided through personal relationships, and that this is a very real and beneficial part of the hidden curriculum that a school of our size can provide. The school does have a recognised policy relating to discipline and control but its implementation sometimes "has holes".

Whilst equal opportunities are offered to both sexes, little is done to minimise the hidden constraints that lead to sex inequality both in and outside the classroom, and this caused dissatisfaction, as did also the poor provision of machinery and technology despite the welcome acquisition of the computer. The Religious Education department interpreted interpersonal relationships in terms of the family and health education, and felt that the development of these is solely being covered by its own department. Another member counter-argued that health education is implicit in the syllabi of other subjects of the curriculum. It was seen as desirable by some that there should be an integrated sex education programme.

Departments were not happy with the CSE exam as a means of
measuring the effective use of language. The non-examination courses show up the artificiality of the examination courses. No one understood the meaning of "minimises the constraints which may inhibit the development of adult skills" or "citizenship skills" and so no comment was offered.

How the curriculum should be adapted to face the change in society caused by mass unemployment was considered with great concern. How should the school respond? What should the school provide? Should pupils be prepared for unemployment? Prepared to accept it? Prepared to reject it? Prepared to cope with it? Prepared to expect it?

It was agreed that the curriculum should be broad and varied, and provide wide experiences. It was pointed out by one member of staff that if some survival skills were included in the curriculum, the school could be subjected to severe criticism just as the WEA course on "Welfare Rights in the DHSS" had, as being an encouragement to scroungers.

Views ranged from "we are doing as well as we can" to "we are not responding as well as we might". It was generally agreed that resources should be made available so that pupils are prepared to face possible unemployment, but many considered they should not be educated to accept it.

In conclusion, the Faculty considered the process of this evaluation. Throughout their discussion there had been considerable, and often, heated debate over definition of terms, but this was perhaps felt to be inevitable when a large proportion of the faculty is concerned with linguistics. A further weakness in the process is that not
all individuals are capable of publicly admitting to areas of weakness, and as a result attention is focused on the strengths of departments.

C. MATHS AND SCIENCE FACULTY

The Maths and Science Faculty includes the Maths, Science and Traffic Education departments.

Since there were so many criteria to consider, this group decided to take for in-depth discussion those points which were of particular concern to them. It must, therefore, be made clear that because no specific comment was made on the curriculum, it should not be read that the Faculty was neither concerned about nor contributed to that particular aspect.

All members of the group agreed that the development of such personal attributes as self-esteem, tolerance, self-confidence, resourcefulness, initiative etc: are a recognised part of their hidden curriculum.

The Traffic Education department felt that with its syllabus, and with resources liberally available from external sources, it makes a unique and highly successful contribution to the school's curriculum.

The Science department with its strong emphasis on practical work in the laboratory for the whole age range, and for exam, and non-exam candidates, felt that it provides an enormous opportunity to learn through experience. It was also stressed that their subject helps to develop political understanding, and with that part of their syllabus on
ecology, encourages the development of skills that will help pupils in controlling and enhancing their environment. The introduction in September 1982 of the computer, and the purchase of a further quantity of calculators means that some machinery and technology has been moved into the classroom. Neither the Maths nor the Science department make any contribution to liaison with industry or to awareness of formal and informal opportunities after 16. The Maths department felt that it makes little, if any, contribution to political understanding, though the possibility that the use and interpretation of statistics might do so, was discussed, and as to responding to changes in society, the department on the whole took the view that since maths deals with absolutes, and not with people, it did not make any contribution. All members of the group agreed that the emphasis they place on learning to learn rather than fact acquisition is very important. In Maths in years one to three, opportunities for discovery and investigation are provided for all pupils, but in years four and five, these opportunities diminish and largely disappear, for many pupils under the pressure of exams, when fact acquisition tends to predominate and work is mainly concerned with the consolidation and extension of topics covered in earlier years. The Science department also agreed that they are inhibited in fulfilling the school aims by the external exam syllabus, and that their work is solely exam-orientated for those fourth and fifth year pupils. In registering their dissatisfaction
with the syllabus, scientists felt that the lower school syllabus 'is ours', and the examination syllabus is not ours'.

Reservations were held by the Maths department of the SWRE Board's CSE Arithmetic exam for which nearly a half of the pupils are entered. The school aim is to develop mathematical concepts, in the widest sense, but the syllabus of the Arithmetic exam is narrowly numerical as its title suggests. Whilst this should not necessarily mean that topics outside that exam syllabus cannot be introduced and studied successfully, it does in fact psychologically inhibit that as pupils' motivation diminishes when they feel that the work is not relevant to passing the exam.

Science and Maths, are, apart from English, the only subjects which are studied by all pupils in every year. Unlike English which enters 95% of the pupils for CSE English, and so has only a handful of pupils not taking an exam, both Science and Maths have a comparatively large number in the fourth and fifth years who are taking that subject, but not working towards the goal of CSE.

A major problem in Science is that in this non-exam group there are pupils there because of their low academic ability, together with pupils who just lack interest or motivation. Also, because of the limitations of the timetable, resources, and the staffing ratio, out-of-class science experience is extremely limited, with the result that 'doing the school garden tends to be the only positive experience, and one
which, in time, loses its value. It was generally felt that materials for this group were poor; reference was made to the L.A.M.P. project books, but these only covered ten topics at present. One scientist said, "I was never trained to teach remedial science".

In Maths in the fifth year, the composition of set three is generally such that exam and non-exam pupils have to be set together and, unlike the earlier years when the size of the lowest ability sets are comparatively small, the lowest sets are comparatively large.

Both scientists and mathematicians stressed their difficulty in motivating the pupils of lowest ability. A view was held that, possibly, staff taking those pupils are also poorly motivated.

The Science syllabus for non-exam pupils in the fourth and fifth years is, the scientists agrees, relevant, but the implementation of it is not adequate and could certainly be improved. The Maths syllabus was felt to be in need of some review and development, but one member said that due to other more immediate demands, insufficient time is available to do so.

Both departments agreed that this school is probably not alone in having these problems, and that the pooling of resources and expertise with other schools and sources could be helpful.

Opinion in the group varied on the contribution they make to the development of language; some members indicated the limitations which the subjects, particularly Maths, suffers
from, whilst one member pointed out that there could be a wider interpretation of the meaning of language, quoting as an example 'the language of algebra'.

The whole group considered that links between home and school are good, particularly now that we have the larger format together with the parental interviews, though one member pointed out that parents evenings are only held for first year parents.

In assessing the curriculum as a whole, this group, as did the other two groups, highlighted the problem of there being areas of the curriculum of which staff knew nothing or very little, a fact many regretted. Some staff felt that short departmental explanations at staff meetings could be helpful, but others said that these would lengthen already long meetings. A suggestion was made that a very revealing exercise is to follow through the timetable one day of a particular pupil, but it was acknowledged that lack of time and the need for staff cover made this extremely difficult.

One head of department observed that he lacked the opportunity to visit even members of his own department. With these limitations of knowledge recognised, the group assumed, perhaps hopefully and with no real grounds, that those parts of the curriculum not being attempted by them was being done by others.

SOME OBSERVATIONS BY THE HEADMASTER

The curriculum which came under scrutiny and evaluation
during the present exercise was that offered during the 1981/82 academic year. That curriculum itself was the result of earlier staff discussions which incorporated an in-service course in the October of 1980, led by one of Her Majesty's Inspectors, the main part of which concerned the provision of a viable curriculum in a declining pupil roll, and staff, situation. It should not, therefore, be viewed as the curriculum which might have been on offer in other, more favourable circumstances.

It is important to stress also that the curriculum for 1981/82 attempted to match the aims of the school, ones which had been agreed by members of staff in earlier years and which were felt by staff in 1980 not to warrant amendment. The recent evaluation exercise used either amended aims or totally new criteria to evaluate that curriculum.

The procedures with which the curriculum in this school is finalised are important to bear in mind. The Curriculum Co-ordinating Committee, consisting of the senior management team and one or more representatives from each of the faculties, is the main vehicle for the discussion of all matters affecting curriculum. Recommendations made by the Committee are subsequently brought to a formal staff meeting for approval. It is, therefore, realistic to claim that the curriculum represents the considered views of all staff - it is not imposed from above - that it has been planned as a whole, with some attempt to provide balance and coherence.

In addition to regular meetings of the Curriculum Co-ordinating Committee, subject departments are encouraged to
hold regular meetings, at which matters affecting that department's contribution to effecting the aims of the school are discussed, apart from other curriculum and administrative issues. Further, at least two time-tabled meetings between each department and the Headmaster are held annually to review work, progress and curriculum on offer. Department of Education and Science and the local Authority's publications are included in discussions, with particular emphasis on those sections of a document/publication relating particularly to a department. Participation by teachers in in-service training, school-based and Authority sponsored, is strongly encouraged, with heavy uptake generally by teachers. Department heads are required to produce policy statements, incorporating clearly defined aims and syllabus geared to matching those aims. Policy statements are reviewed annually and, of necessary, amended and up-dated.

If the curriculum for 1981/82 fell short in serving the immediate and subsequent needs and responsibilities of pupils, then the third factor in determining the quality of a pupil's education - the first the curriculum. the second the quality of teaching - namely, resources available, must be taken into account. The physical resources, particularly accommodation, are woefully inadequate and have been the subject of comment and report by the Authority's advisers and the Inspectorate.

It would seem that the main areas of concern about the 1981/82 curriculum related to the following:
the curriculum was not adapting to changes in society, with particular reference to unemployment; the curriculum did not provide for the development of pupil's political understanding/competence; no space appeared on the time-table for Citizenship; the curriculum was not providing opportunities to develop appropriate skills for adult life; the curriculum was exam-orientated in the upper school; the lack of physical resources was hindering pupils in the development of skills in the use of machinery and other technological equipment; no real links exist between industry and the school; the curriculum was too narrow, with some staff not aware of what is done in other areas; no integrated sex education programme was apparent; the needs of non-examination and remedial pupils are not adequately catered for in some areas; the experiences provided by the school for pupils were not sufficiently realistic - pupils failed to communicate effectively with employers; the whole curriculum was never really observed by staff; no exchange between teachers of syllabi and policy statements operated, communication was poor between different subject areas, and insufficient knowledge was available to staff about what went on in other departments; and the inadequate preparation of pupils for adult life from economic, social, political and vocational viewpoints. I would not accept that a school's aims should include
preparation of pupils for permanent unemployment. Apart from a nihilist, defeatist philosophy underlying such an aim, we would be doing a great disservice to pupils if valuable school time was used for this purpose. Schools did not prepare pupils for unemployment in former times, particularly in the 1930's, a time when, with a smaller workforce, unemployment figures reached over three million. It is right, however, to make pupils aware of their rights when unemployed, and to equip them to cope with temporary, albeit prolonged, unemployment.

The curriculum for fourth and fifth year pupils incorporated much that could be justifiably claimed as providing pupils with the skills needed in adult life. A careers programme, comprehensive in its scope, was provided for third, fourth and fifth year pupils as were work-experience opportunities for fifth year pupils, modules relating to interviewing techniques and political education were incorporated within the fourth and fifth year Social Education Programme as were opportunities for pupils to participate in the Young Enterprise Scheme, enabling them to get practical experience in the running of a company. Traffic Education, including practical riding lessons, formed an integral part of the preparation of pupils for adult life. Health Education, intensively covered by nearly all girls in years four and five through Child Care, was offered to all pupils indirectly through a number of subjects - Careers, Physical Education, Domestic Science, Needlework, Traffic Education, Woodwork,
Science. With the incorporation of more subjects, particularly Science, History and Geography, within the common core curriculum, greater attention was paid to developing a pupil's scientific, economic and political understanding of society. For less able pupils the Record of Personal Experience course motivated them to display and develop personal qualities. The use of Active Tutorial Work also helped to develop social skills, particularly interpersonal relationships. Extra-curricular activities, too, (e.g. visits, camping, foreign holidays, games, drama production, concerts) furthered the development of social skills.

Certain criticisms about the 1982/82 curriculum may justifiably be upheld. Although, for example, the curriculum appeared attractive, what really mattered was the menu for each student, and for some they were deprived of certain areas of experience which should be theirs by right.

It is also a matter of concern that the opportunities for the development of skills relating to the use of machinery and technology were extremely limited - these the result, however, of inadequate physical resources.

The issue of an exam-orientated curriculum in years four and five is one that faces all secondary schools. Innumerable publications in recent years by the Department of Education and Science and Her Majesty's Inspectorate point to the debilitating effects that external examinations can have on a school's curriculum. It is appropriate, however, to stress that of forty periods per week, in the fourth year twelve
periods, were devoted to non-examination work, in the fifth year fifteen periods, these mainly devoted to preparation of pupils for adult life.

The curriculum evaluation exercise has pointed up several messages to the Headmaster, to Heads of Departments, to subject teachers, and to Year Tutors. What becomes of vital importance is that these messages are noted, acted upon, and appropriate remedial action taken. Unless this is done, the work and time of staff over the previous fifteen months will have been wasted.

The way ahead
Prior to the evaluation exercise, steps had already been taken to effect a better curriculum for all pupils. The exercise underlined the need for this to be done and during the present (1982/83) academic year discussions both within, and between, departments have centred more heavily on the need to provide a curriculum even more suited to the immediate and subsequent needs and responsibilities of young people. The local Authority's new Curriculum Staffing Policy, effective from September 1982, was crucial in allowing this to be done.

The curriculum deficiencies of individual pupils have largely been put right. All pupils in the fourth and fifth years now follow a much broader core curriculum embracing English, Mathematics, Religious Education, Science, Physical Education, one or more of the Creative Arts subjects, Careers
Education, History, Geography, Health Education, and a Social Education Programme incorporating the following: careers visits, visits by careers speakers, work experience, interview skills, Political and Economic Education, Computer Studies, and Police and Traffic Education. Active Tutorial Work has been sustained and the Record of Personal Experience Scheme made available to a wider range of pupils, with still further extension envisaged next year. Although not all pupils at present follow a foreign language course, steps have been taken, starting in the present third year, to ensure that most pupils follow a French Course, either CSE orientated or one based on the York University Language Scheme. These will continue to be followed by these pupils into the fourth and fifth years. All pupils in the first and second years study French, with a selected number of more able pupils also following Spanish from the second year.

During the evaluation exercise the matter of department and teacher isolation in relation to the whole curriculum became apparent. The following measures have now been taken to remedy that failing; the exchange of syllabi and policy statements among departments; discussions between staff and school governors scheduled for the near future; more detailed discussions between the Headmaster and different departments concerning the matching of aims and curriculum at their twice-yearly meetings; and invitations to the Head (and others) of a department to attend another department's meetings, with minutes of the meeting recorded and
subsequently made available to all staff.

In the immediate future, a review of the functions of the Curriculum Co-ordinating Committee will be undertaken and its terms of reference more clearly defined. However, normal consultative procedures amongst the staff have yet to be completed on: arrangements for the presentation of department reports at future formal staff meetings; the incorporation within a department's policy statement of the school's aims alongside those of the subject's aims; and a statement of a department's contribution to effecting the realisation of the school aims. Finally, the curriculum for 1983/84 will shortly be discussed by staff. This will provide a further opportunity to ensure that the lessons gained from the evaluation are applied.

The School's staff have been much involved in curriculum innovation during the last seven years and developed a professionalism which, in turn, made possible curriculum enrichment for pupils. Although weaknesses were pointed up in the curriculum as a result of the evaluation exercise, the exercise itself could not have been so successfully undertaken had the staff not possessed a "curriculum awareness" and had already undertaken earlier curriculum evaluation exercises. The commitment of staff, the many meetings (some prolonged!) attended by them during the last fifteen months reflect their high sense of professional responsibility and determination to give the best, in the circumstances, to pupils at this school. To all participants
I offer my sincere thanks, not least to our school secretary, who played an invaluable role in typing the draft and final reports.

(That is the end of the direct quote from the school's agreed document.)
APPENDIX B

A PLYMOUTH SECONDARY SCHOOL SELF-EVALUATION
(INVESTIGATION THREE)

SOME OBSERVATIONS BY TEACHERS ON THE PROPOSED
CURRICULUM EVALUATION PROCESS

Staff were invited to submit brief and, if they preferred, anonymous comments on the process. The contributions of all those teachers who made them are printed, in full, below.

"The process employed was invaluable in that it persuaded us to:

- Inspect and collectively discuss our curriculum.
- Become more aware of the detail and meaning of our own school aims.
- Be more aware of the significance of some recent documents.
- Exchange views and opinions with another department in relation to the above".

"I felt the exercise was valuable but would have liked more reports on what was going on at the committee stage and more time for the discussion. I felt that the exercise pointed out more weaknesses than strengths and the results did not reflect the true achievements of the department, possibly due to the introspective nature of the departmental staff involved".

"I feel the afternoon was too brief a period to conclude the evaluation process. I would like to have had a longer period"
of time in which to complete the exercise in its entirety. I feel an exercise of this importance needs time, and hurrying the process prevents discussion and conclusion".

"A profitable exercise in that it affected the whole staff and whole curriculum as well as one's own specialist subject. It helped to widen one's view as a result. The process 'forced' an evaluation of one's own subject and aims and provided other opinions and aims and ideas which were well worth hearing and considering. In particular, the almost insuperable task of preparing pupils for the future which they are facing is recognised, but as yet that problem has still to be solved by us all".

"It was valuable to the school - I am confident we pinpointed weaknesses and are resolved, if possible to make improvements in the curriculum. Personally, it was stimulating - I now know a lot more about my own teaching, its weaknesses and strengths, which I did not have to 'own up' to publicly, but which I aim to do something about".

"Almost inevitably departments concerned with the use of language argued over semantics. Terminology could have been more closely defined. Plenary sessions and the original committee meetings were extremely interesting, but group sessions tended to emphasise the compartmentalisation danger inherent in the curriculum".
"This exercise was useful in establishing professional opinions into understanding the effectiveness of the school's curriculum. It illustrated a lack of close liaison in not fulfilling an integrated "across curriculum" approach to teaching in a constantly changing educational world. Relevant committees should be established to determine and review such extensions to the curriculum and to suggest methods for their incorporation and objectiveness."

"The exercise showed the interdependence of all staff in the development of a viable curriculum. That the relationship between the school aims and the curriculum required constant review and monitoring. That there should be a direct relationship between the curriculum and the needs of society. That outside agencies and studies could and should have a bearing on the structure of the curriculum. That individual staff and departments were not separate-functioning units within the curriculum."

"A very valuable exercise. The process was rather involved and proved at times difficult for those members of staff not in at the start - maybe an indication that ALL staff need to have adequate preparation at the outset. The final stages were the most successful. It is essential that the results are followed up and, as far as possible, implemented in 1983/84."
"A very useful exercise in that it pinpointed areas of weakness where improvements can be made. This has already happened in exchange of syllabi. The process seemed somewhat divisive initially and overall tended to compartmentalise subjects and faculties".

"As a form of 'self assessment' the curriculum review exercise was on the whole successful. It was inevitable that at some stage staff would experience some measure of apprehension.

Many questions were left unanswered - some were not posed. The most valuable stage was the reporting section from the scribes - it was interesting to see that even though the staff was selectively separated, the collected views were very similar".

"As an exercise in curriculum evaluation, it held three vitally important advantages -
Allowed staff the opportunity to examine their curriculum in a way which
a) provided a mechanism for possible development
b) provided a formal opportunity for cross subject discussion and comparison.
Provided, for the first time, an opportunity for all staff to compare their own feelings, views and objectives with those
of other departments and individual teachers.

As an exploratory exercise which could form the model (developed) to meet an imposed requirement by an outside authority.

It had some real drawbacks which hindered effectiveness.

Lack of universal definition/understanding of many aims (e.g. school aims, Department of Education and Science aims).

It was cumbersome in form and in order to allow for reasonably prompt reaction would require streamlining.

Basically it was a useful exercise in as much as it could lead to all staff being actively involved at some stage of developing on the curriculum.

It also provided a useful pressure valve (airing of grievances)*.

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"The exercise enabled members of staff from the Craft departments to consolidate, on the whole, ideas and general policies. I feel that the group are somehow closer now and appreciate each other's problems. I was pleased to note that many on the whole school staff think that we do not give out children the opportunity to use machinery, which in industry today, is essential.

There was confusion and misunderstanding about some of the terms used in the questionnaire - different faculties within the school tackled the questions in a different manner from others".

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"as an exercise this has been valuable, permitting an
exchange of views and exposing problem areas. It is important that in any future exercises that confidentiality be maintained, allowing teachers to examine themselves and their problems openly and honestly in security and freedom.

"Although an end product is needed to justify the holding of the exercise, to me the most useful and rewarding part of the whole thing was the discussion. I was very pessimistic about that part, but in the event it proved to be stimulating."

"Any exercise which promotes self analysis of one's own aims and objectives within the framework of the school curriculum must be a worthwhile exercise in itself. Just as important is an insight into the fundamental objectives sought by other departments within the school and to subject them to similar scrutiny. We are all guilty of allowing objective though to become buried, not deliberately, but through the pressures and constraints imposed by examination syllabi and their broad content. I shall look at my subject content with particular reference to the subject matter on offer and the skills sought by employers with regard to Technical Drawing and Graphical communication skills."
APPENDIX C

The FOCUS microcomputer program was developed by Thomas and Williams (1972) and is based on a modified version of McQuitty's (1966) Hierarchical Linkage Analysis.

Thomas (1976) describes a Kelly Repertory Grid as a two dimensional table or matrix in which any cell \( a_{ij} \) specifies a rating of element \( i \) on construct \( j \). The focusing program re-sorts the rows and columns of the grid to produce a matrix in which every pair of adjacent rows and columns has more in common than any other arrangement. The procedure used is based on the calculation of the absolute or city block metric

\[
d_{ij} = \sum_{k=1}^{e} |a_{ik} - a_{jk}|
\]

which is a special case when \( r=1 \) of the Minkowski metrics defined by

\[
d_{ij} = \left\{ \sum_{k=1}^{e} |a_{ik} - a_{jk}|^{r} \right\}^{1/r}
\]

The distance measure is then mapped into a construct percentage matching score, using the mapping

\[
d_{ij} \rightarrow \frac{-100d_{ij}}{(n-1)e} + 100
\]

where \( n \) is the maximum of the rating scale and \( e \) is the number of elements. This produces a value of 100 for perfect match, 0 for no similarity, through to -100 for negative match. Unless the ratings on each construct are symmetrically distributed, matching scores are not necessarily balanced about zero. As a construct is a bipolar linear entity it is included twice, once with all the ratings reversed, and the actual choice of original or reversed form is made at the time of incorporation into a cluster.

When computing matching scores for elements, the mapping

\[
d_{ij} \rightarrow \frac{-100d_{ij}}{(n-1)c} + 100
\]

is used as elements are not bipolar. This produces values from 100 for perfect match to 0 for no similarity. \( c \) is the number of constructs.

Using the matching scores matrix to identify successively the most highly related pairs, the items are clustered and re-ordered on the basis of clustering. A tree or dendrogram is printed, showing the relationships involved, followed by a listing of the clusters. After both constructs and elements have been re-ordered, the focused grid is produced. The tree diagrams are scaled to fit this. 

(Thomas, 1976, p.1)
APPENDIX D

An example of a grid matrix, computer print-out and a tree diagram as used in this research.

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Cluster 6 joins 3 5 to 2 Score: 85
Cluster 7 joins 2 3 5 to 1 4 6 8 7 Score: 82.5

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Cluster 7 joins 4 7 5 to 1 8 2 6 3 Score: 80