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ABSTRACT

This monograph presents abstracts of research studies conducted with the support of grants provided by the Queensland Board of Teacher Education. The following studies are summarized: (1) "The Effectiveness of Induction Programs for Beginning Teachers in Queensland State Primary Schools" (Elspeth Davis); (2) "The Development and Validation of an Instructional Guide for Teaching of Academic Skills in the Primary Grades" (Barry A. Fields); (3) "Pathways and Barriers to Reflective Teaching in an Initial Teacher Education Program" (Jenny Gore and Leo Bartlett); (4) "Use Made of Key Elements of Secondary Mathematics Curriculum Units by Graduates of Brisbane College of Advanced Education during Their First Year of Teaching" (Robert Peard); and (5) "An Evaluation of Bachelor of Education Curriculum Studies" (Ian M. Whelan). (JD)

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LIST OF CONTENTS

CONTENTS OF PREVIOUS RESEARCH GRANTS SERIES

FOREWORD

The Board of Teacher Education's research grants scheme has aimed to encourage research into teacher education by providing limited funds to support research projects which have the potential to make a significant contribution to the development of teacher education in Queensland. Summaries or abstracts of completed studies which the Board feels are of interest to a wider audience are published by the Board in its Research Grants Series.

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Further details concerning particular projects, including information on the availability of the full reports, may be obtained from the individual researchers concerned.

THE EFFECTIVENESS OF INDUCTION PROGRAMS FOR BEGINNING TEACHERS IN QUEENSLAND STATE PRIMARY SCHOOLS

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AIM

The purpose of the study was to assess the effectiveness, as perceived by beginning teachers in Queensland state primary schools, of the induction programs to which they had been exposed during the first twelve months of their initial teaching experience. This aim was addressed by collecting information related to the following sub-problems:

1. What were the areas of need of beginning teachers in the first year of teaching, and to what extent were these needs met from various sources?
2. What was the nature of the school-based induction programs they experienced?
3. In what areas of need did beginning teachers receive most help from school-based induction programs?
4. How well did college courses prepare students for beginning teaching and how could these courses be improved?
5. How could school-based induction programs be improved?

METHOD

A survey questionnaire designed to collect the data was sent to 321 teachers who commenced teaching in 1984. Eighty-nine teachers (28 per cent) responded.

The data were processed using a sub-program of SPSS-X.

MAJOR FINDINGS

The findings of the research were that:

1. The problems of beginning teachers in Queensland schools were real and extensive and many of their needs were not being met formally through induction programs or informally through relationships with others.

2. Some teachers believed that they were receiving more help than was needed in a few areas. Although beginning teachers require help, many also want to use their own problem-solving abilities in overcoming their problems.

3. One largely untapped source of input into induction programs was found to be the large number of experienced teachers who showed willingness to help beginning teachers and whose help was accepted by them. Most help for beginning teachers in the study came from other teachers.

4. Induction programs, as recommended by the 1978 Review: Teacher Education in Queensland (the Bassett Report) and the Board of Teacher Education (1981a, b), were not being conducted in a large number of Queensland primary schools. It was also shown that in those schools where induction programs were conducted, many of the needs of beginning teachers were not being met.

5. Pre-service courses as a preparation for beginning teaching were not providing help required in some areas. More practical help was called for.

6. A further conclusion to be drawn from the findings of the study was that the close relationship between the colleges and schools recommended by the Bassett Report (1978) and the Board of Teacher Education (1981b, p. 87) has not eventuated. Beginning teachers received little help related to induction from college lecturers, and there was no indication of input into induction programs by colleges.

7. Induction programs could be improved by giving more help with the following areas: planning and preparation, school routine, procedures and policy, classroom management-interaction, classroom management-organisation, curriculum topics, evaluation, resources and the teaching/learning process. Attention also needs to be given to initial experiences, individual differences, parent/teacher relationships and socialisation.

8. Induction programs could also be improved by having more time devoted to them, especially in school hours, and by having input from experienced teachers, specialist staff and advisory teachers as well as from principals and/or other administrative staff.

The study showed that the provision and effectiveness of induction programs leaves much to be desired.

IMPLICATIONS OF FINDINGS

In view of the recommendations in the Bassett Report and the report of the Board of Teacher Education (1981b), the fact that no induction programs were conducted in the schools of half the beginning teachers surveyed, was difficult to understand. (These reports recommended that systematic schemes of induction needed to be planned and implemented in all schools where there were beginning teachers.) The researcher therefore sought an explanation for this failure to provide induction programs.

By extrapolating from the findings of the study, the information found in the literature search and the present researcher's personal experience as an associate administrator involved in the induction of beginning teachers in Queensland schools, two possible reasons why induction was not being conducted effectively in Queensland primary schools can be given.

The first is that many of the principals were not aware of the importance of induction. (The study showed that many principals gave little help.) The second is that there was a lack of practical help from higher levels of the Department of Education.

The practical help considered necessary if induction programs are to be effective

relates to the provision and training of suitable resource personnel to conduct and contribute to induction programs and the provision of release time for beginning teachers to take part in professional development through induction programs.

From her own experience, the researcher speculates that there will be little co-operation in induction between schools and colleges in Queensland until the relevant recommendations of the Board of Teacher Education Report (1981b, pp. 87-88) are implemented. These recommendations relate to policy statements to be prepared by the Department of Education and consultations and collaboration between employing authorities, schools and teacher education institutions.

RECOMMENDATIONS

The major recommendation of this study is that systematic schemes of induction be planned and implemented in all schools where there are beginning teachers.

A second recommendation is that schools plan and implement induction programs using the guidelines set out in the document produced by the Queensland Department of Education's Standing Committee for Primary In-Service Education (1979). It is further recommended that special attention in these programs be given to: planning and preparation, school routine, procedures and policy, classroom management-interaction, classroom management-organisation, curriculum topics, evaluation, resources and the teaching/learning process.

That programs should be individualised as far as possible is also recommended. In addition to this, it is recommended that beginning teachers be encouraged to use their own problem-solving strategies, and their own ideas as well as those supplied by others in relation to the problems they experience.

Other recommendations for the improvement of induction programs are: that experienced teachers be asked to contribute in areas where they have special skills; that programs be conducted in school hours as much as possible; that programs commence at the time of appointment of the beginning teacher; and that programs be allocated sufficient time for the needs of the beginning teacher to be met.

An important recommendation of this study is that practical help at departmental and regional levels be given to schools in the form of provision of trained personnel to conduct and contribute to induction programs. Such resource people could be administrators or staff teachers from the school to which the beginning teachers are appointed, together with advisory and specialist teachers, or they could be professional tutors specially trained to work with beginning teachers. Help is also recommended in the provision of release time for beginning teachers to take part in professional development through induction programs.

The findings of this study support the recommendations arising out of the 1980 Induction Conference (Board of Teacher Education, 1981b, pp. 87-89). In particular, the recommendation related to policy on induction and articulation with pre-service preparation is supported.

DIRECTIONS FOR FUTURE RESEARCH

Few of the 'Suggestions for Future Research' put forward by the Board of Teacher Education (1981b, p. 89) have been followed up. The researcher believes that the suggested research would provide information which would assist those responsible for the induction of beginning teachers.

In particular, the researcher believes that useful information regarding induction would be obtained from case studies in selected schools and that a pilot induction program

should be conducted in a number of schools. Such a program should be monitored and evaluated and a report given to the Board of Teacher Education. Information from case studies and pilot programs should be circulated to all schools with beginning teachers.

Also necessary is further research in relation to desirable characteristics of persons conducting induction programs and the skills more appropriately developed in schools than in teacher education institutions.

Further research into specific needs of beginning teachers related to socialisation is needed. It is essential to understand more about the effects different school and classroom contexts have upon induction, and the effects the quality of induction has on new teachers' effectiveness. In particular, attention should be drawn to the quality of interpersonal relationships between teachers in different settings.

Documentation of successful cooperation and collaboration between departmental senior officers, pre-service institution personnel and school representatives should be circulated to schools and colleges as it occurs. Such information could assist the development of induction programs and contribute to the effectiveness of induction of beginning teachers in Queensland primary schools.

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THE DEVELOPMENT AND VALIDATION OF AN INSTRUCTIONAL GUIDE FOR THE TEACHING OF ACADEMIC SKILLS IN THE PRIMARY GRADES

An In-Service Project for Remedial and Regular Class Teachers

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INTRODUCTION

Purpose of the Project

The project aimed to:

1. Review the literature on teacher effectiveness for the purpose of extracting principles of instruction suitable for use by primary teachers working with low-performing children and mainstreamed mildly handicapped children. The focus of instruction was on the teaching of basic academic skills.
2. Synthesise the instructional principles obtained from the review into a system of instruction which had relevance to the nature of primary teaching and was responsive to the immediate practical concerns and functions of primary teachers.
3. Develop the system of instruction into an easily readable and practical guide for class teachers.
4. Disseminate the guide to a broad sample of special education personnel for comment and evaluation.
5. Conduct an initial evaluation of the guide using a sample of primary teachers. The evaluation was to focus on the teachers' level of acceptance of the instructional system and its usefulness in helping teachers to explore and critically examine their instructional skills.
6. Obtain information from the various evaluations for the purpose of refining and improving the effectiveness of the instructional guide.

Instructional System

The instructional system was developed out of an exhaustive review of the literature on teacher effectiveness and related classroom research on teaching skills and strategies. Particular attention was given to instructional approaches found to be effective in working with low-performing and mildly handicapped children in the area of basic academic skills. The system was presented to teachers in the form of a 169-page, spiral-bound teaching guide entitled The Essentials of Teaching. Chapters covered in the guide included:

1. Overview of Research on Teacher Effectiveness
2. Lesson Components and Functions
3. Teaching Skills
4. Classroom Management
5. Implementing the System.

The instructional system was centred around five basic components or functions of the lesson - the lesson introduction, the development section of the lesson, guided practice, independent practice, and the lesson closure. In all a total of 196 instructional recommendations were defined and illustrated across the two chapters on teaching skills and classroom management (see the appendix).

The guide also included a strategy for implementing the instructional recommendations.

METHODOLOGY

Dissemination

The instructional guide was distributed to all remedial teachers in the Darling Downs Region and copies were circulated through the remedial teacher and guidance officer network throughout the state. In all, a total of seventy copies was distributed to special education personnel, professional libraries, tertiary institutions, staff development centres, resource centres, and schools throughout the state.

Xeroxed copies of the guide were distributed to seventy-five teachers enrolled in the Bachelor of Education program at the Darling Downs Institute of Advanced Education. These teachers were asked to evaluate the guide and it is data on their feedback on which this report focuses.

Review Processes

The seventy-five teachers who undertook the detailed review of the guide were asked to:

1. carefully read the guide;
2. comment in general terms on the usefulness of the instructional system to their teaching;
3. identify the factors which would limit their ability to implement the system.

In addition to the above steps, the teachers were also asked to go through the implementation process as detailed in Chapter 5 of the guide.

These teachers were asked to:

1. Rate on a five-point scale the extent to which they already used the 196 in-

structional recommendations. The scale included ratings for Never Used, Rarely Used, Occasionally Used, Frequently Used, and Always Used.

2. Rate the perceived appropriateness (to the teacher's teaching context) of items identified as Never or Rarely Used.

3. Rate the items selected in (2) above as appropriate in terms of their ease of implementation (from Very Easy to Implement to Very Difficult to Implement).

Data on the implementation process were to be used to identify instructional skills which need considerably more 'promotion', i.e. justification, exemplifying, etc., for them to be accepted and adopted by teachers. Skills which were not currently used to any great extent, which were perceived as inappropriate or irrelevant, and which were rated as very difficult to implement were the focus of this identification process.

RESULTS

General Acceptance

Response to the instructional guide has been overwhelmingly positive. Demand for copies of the guide has been such that there seems to be a substantial market for its sale through a publisher or some such outlet. It appears that the guide is being widely circulated within remedial teacher and guidance officer networks and is meeting a previously unmet need for explicit and practical advice about how to teach remedial and handicapped children.

The seventy-five regular class teachers who evaluated the guide were also positive in their reaction to it. Of interest are the comments made by many teachers that the guide:

1. meets a need for detailed and practical advice about how to teach;

2. casts research on teaching in a more relevant and useful light;

3. gives teachers a means by which they can evaluate the effectiveness of their teaching behaviour.

There were concerns however. Many teachers reported that the instructional system was a little 'daunting' - so many things to remember and to do in the classroom. These same teachers and others commented that a support structure such as in-service training would be needed for them to effectively implement the system.

Current Use of the Instructional Recommendations

Across the seventy-five teachers a moderate level of implementation was reported for the 196 instructional recommendations. The mean rating of items for the sample was 3.64 indicating an 'occasional' use of the 196 items. Teachers varied however. Eighteen of the teachers (24 per cent) had mean ratings of 4.00 or above for extent of current use. This indicates a 'frequent' use by these teachers of the instructional recommendations. Seven of the seventy-five teachers (9 per cent), however, had mean ratings below 3.00 indicating a very low level of current implementation of the instructional system.

A total of seventy-three (37 per cent) of the instructional recommendations were reported to be used frequently or always by 75 per cent or more of the teacher sample. On the other hand there was a substantial number of recommendations that were never or rarely used by a significant number of teachers. Some forty items were rated as never used or rarely used by 25 per cent or more of the teachers in the study.

Appropriateness

Teachers were asked to comment on the appropriateness to their teaching situation of the items they rated low in use. The mean rating for these items (forty in total) was 3.22 on a scale of 1 to 5 with one indicating Totally Inappropriate and five indicating Highly Appropriate. This rating suggests that while teachers are not rejecting outright the appropriateness of the items they rated low in use, they need a stronger justification or rationale for their use in teaching if they are to be accepted and implemented.

Ease of Implementation

Teachers were asked to rate the ease with which items rated 3, 4 or 5 in appropriateness, i.e. moderately to highly appropriate, could be implemented in their classrooms without support or in-service education. The mean rating for ease of implementation was 2.79 on a scale of 1 to 5 with one being Easy to Implement and five being Very Difficult to Implement. In general teachers considered items rated low in use but nevertheless appropriate to their teaching relatively easy to implement.

Limitations

The seventy-five teachers in the study were asked to identify the constraints on their ability to implement the instructional system. The most often cited constraints included:

1. Lack of knowledge of many of the recommendations and lack of training in their use. Many teachers also reported a lack of confidence to teach in the way recommended in the guide.
2. Lack of time. Time constraints related to preparation time and also to lesson time. Many teachers felt that they were too pressed to get through the lessons to be able to implement many of the recommendations, notably in relation to corrective feedback and independent practice.
3. Assignment to composite classes and mixed ability classes. Teachers felt that the range of grades and abilities impeded their ability to teach in the way that the instructional guide recommended.
4. Classroom management difficulties. Where teachers encountered behaviour problems they seemed less able to utilise a varied instructional repertoire, preferring to limit their teaching to a small number of 'safe' strategies or methods.
5. Conflicting perspectives on teaching. The guide is largely oriented to teacher-directed instruction within the narrow confines of basic skills instruction. Many teachers were not comfortable with a direct instruction role. Others were concerned about the lack of emphasis on exploration, discovery, and creativity.
6. The cognitive maturity of the children. A number of teachers pointed to instructional recommendations which they said were inoppropriate (too advanced, too difficult, etc.) for young (Years 1 and 2) primary children.

Several other constraints were cited by the teachers in the study. These related to school organisation (an emphasis on procedural matters), conflict with inspectors' ideas, lack of resources, the lack of detailed curriculum content knowledge, and the inability to implement so many 'new' procedures.

DISCUSSION

Regular class teachers are frequently reported to be reluctant to accept handicapped children into the classroom because they perceive themselves as not having the in-

structional skills necessary to meet the needs of such children. For the great majority of teachers there appears to be no basis for this apprehension. A decade and a half of research on teacher effectiveness has resulted in a wealth of information becoming available about how to teach which has direct applications for the teaching of low-performing and mildly handicapped children in mainstream settings. This study clearly indicates that:

1. Many teachers are employing teaching procedures which are compatible with this knowledge base.

2. Whether teachers are or are not using the recommendations emanating from research on teacher effectiveness, these recommendations are perceived as generally appropriate for use in primary classrooms and are seen as relatively easy to implement.

3. Access to the knowledge base on teacher effectiveness and some encouragement and support in the use of this knowledge could greatly enhance the educational opportunities of all children, handicapped and non-handicapped.

A small group of teachers, some 10 per cent as indicated by this study, has instructional repertoires which are not compatible with effective basic skills instruction for low-performing and mildly handicapped children Without intensive in-service education and support, and a willingness to change, these teachers would not be good candidates for integration initiatives. Placement of handicapped children into these teachers' classrooms, without a parallel professional development program would appear to be detrimental to the educational opportunity of the handicapped children.

A core of some forty instructional skills (teaching and managerial) are under-utilised by primary teachers. While not all of these skills and procedures are appropriate at all times and in all classroom situations, their greater use by teachers would greatly enhance the impact teachers could have on the achievement of children with learning difficulties. It appears that these skills and procedures need considerably more justification and elaboration if teachers are to be convinced that they should be incorporated into their instructional repertoires.

LIMITATIONS OF THE RESEARCH BASE

While substantial progress has been made over the past ten to fifteen years in understanding what constitutes effective teaching, the knowledge base is still limited in many ways. It is important that these limitations are recognised when the findings from research are being disseminated to teachers so that they know when they are and are not applicable in their teaching. Some of the major limitations are discussed here.

Teacher Roles and Functions

Teachers perform a variety of instructional and non-instructional activities during the course of a school day, term or year. These activities relate to teaching responsibilities linked to the classroom, school, and in many instances to the community which supports the school. Among other things teachers are expected to facilitate independent learning, foster positive interpersonal relationships, identify and mobilise resources, know, administer and improve school policy, plan and/or assist in community activities, and encourage parent involvement.

At some times during the school year no time is allocated to academic instruction at all. The teachers and pupils may be engaged in a swimming or athletics carnival, a play day or speech day. Some schools allocate one or more days to formal mid-term, mid-year or end of year exams. All of these activities and functions are legitimate and important. They make up the full set of experiences which is the primary school curriculum. Research on teacher effectiveness addresses and is relevant to just one, albeit important, aspect of this curriculum - the teaching of academic skills.

Content and Pupil Limitations

The teaching procedures stemming from recent teacher effectiveness research are applicable to certain types of content and not to others. Most studies to date have centr on teaching basic reading and maths skills to low-performing and disadvar aged primary children. As such, until the findings of this research are found to be relevant to o.ner pupils (e.g. older children and higher ability children) and to other facets of the curriculum, they can be applied with confidence only to the curriculum objectives and children which have been investigated.

The teacher effectiveness research has most applicability to the teaching of knowledge and skills and some aspects of comprehension tasks. Examples would include instruction in number facts, decoding skills, vocabulary, musical notation, grammar, factual information in science and history, the mechanics of cooking, and accounting. The research knowledge base is also applicable to the teaching of processes and problem-solving steps which are to be applied to new problems or situations. Examples here would include mathematical computation, sound blending, applying phonics rules in decoding, map reading, applying scientific laws or principles and solving algebraic equations.

The findings of research on teacher effectiveness are least applicable to children of high socio-economic status (SES) and high-achieving children, and also to content which is not amenable to being broken down into sequential steps for presentation and learning: aspects of poetry appreciation, creative writing, the analysis of literature or historical events, the discussion of social issues and any content which involves the cognitive processes of interpretation, analysis, translation, synthesis and evaluation.

Instructional Design and Subject Matter Content

Until recently the findings from teacher effectiveness research have produced collections of relatively discrete teaching skills (e.g. how to question, how to correct errors and so forth). While these skills are now being brought together into systems of instruction, they are still largely unrelated to principles of instructional design, particularly the selection and sequencing of content. In addition, they are typically 'content free', i.e. not specifically related to how teachers should teach specific curriculum subjects. To illustrate, the teacher effectiveness literature can give sound advice about how to teach letter sounds, but it is silent on the question of when to introduce particular letter sounds (e.g. should p, b and d be taught together or in close proximity, or should they be separated for teaching to avoid possible confusion?). Research provides very clear guidelines for teacher explanation, but it does not specifically address the question of how to explain (teach) long division.

While more and more curriculum texts are incorporating knowledge of how to teach from teacher effectiveness research, much of the relating of teaching skills to curriculum content still needs to be done by the teacher. Exceptions to this would be highly structured direct instruction programs such as DISTAR [illegible] Reading and Morphographic Spelling.

The limitations outlined above should make teachers sensitive to when and when not to use the teaching skills extracted from the teacher effectiveness literature. It should also be clear that what is offered is not a panacea for all the problems of teaching. No such panacea exists and is unlikely to ever exist in 'packaged' form. What is being recognised here is that each teacher and each classroom context is different, and the skills of teaching will need to be adapted, modified and applied in unique and creative ways by the class teacher. What is also being recognised is that there are no simple, single solutions to the problems of how to teach. Research can provide some possible solutions but because classroom contexts vary so much there are likely to be many, as yet undocumented, paths to achieving the same objective.

Finally, it should be clear from the above discussion that the view of the teacher being presented here is that of decision-maker. While many curriculum decisions are made for teachers through the implementation of state guidelines (syllabuses) and school curriculum plans, there is still considerable freedom for the teacher to implement the curriculum in his or her own unique way. Teachers every day make decisions about what to teach - content, tasks and activities - how to present this content, how to organise and manage pupils, how to assess learning, etc. Research can guide the teacher in making defensible and correct decisions but it cannot tell the teacher exactly what to do. That decision is the teacher's to make. That is what raises teaching from the level of a job to a profession.

FUTURE INITIATIVES

The guide has been set as a prescribed text for the unit 'The Teacher in the Mainstreaming Process', a unit in the Graduate Diploma in Teaching (Exceptional Children) program offered by Darling Downs Institute of Advanced Education. Some fifty teachers each year enrol in this program. In addition, negotiations are presently under way to offer the guide as a commercial text or as an in-service package for primary teachers. It is also hoped that in 1988 the author can commence a series of intervention studies aimed at assisting teachers to improve their teaching along the lines indicated in the instructional system developed for this project. These studies would initially be 'minimal' intervention studies involving exposure to the guide and feedback on specific teaching and managerial skills which need development. An experimental study involving a treatment and control group, in-service training and frequent classroom observations would be a desirable next step in the validation of the instructional system, but this initiative would require a significant level of funding.

APPENDIX

INSTRUCTIONAL RECOMMENDATIONS

Introducing the Lesson

1. State the objective(s) for the lesson.
2. Describe the nature of the task to be completed and the activities the children will be engaged in.
3. Link the lesson task to work completed in previous lessons.
4. Review and check that the children have acquired the essential prerequisite knowledge and skills necessary to benefit from the teaching of a new, related skill or item of information.
5. Give all essential directions to prepare the pupils for the new task.

Development - Advance Organisers

6. Use an advance organiser where appropriate to provide a conceptual framework for the new information, concept, or skill.

Teacher Input (Explanation)

7. Outline the nature of the task the children are to learn emphasising its major features or characteristics and its structure.
8. Organise what is to be learned into small, easily taught and learned steps or 'chunks' of information.
9. Present information in a flexible format to facilitate its application to a variety of tasks and situations.
10. Provide maximum teacher assistance on the task initially then reduce teacher support in favour of more pupil responsibility.
11. Present information, instructions, etc., explicitly so as to maximise the effectiveness of communications.
12. Talk 'aloud' the steps in a process as you model the task.
13. Mark items of information with clear verbal signals.
14. Use verbal markers to draw attention to important information.
15. Continually direct the children's attention to the critical features of the task.
16. Continually remind the children of previously introduced information, information which is relevant to the ongoing explanation.
17. Structure explanations using rule-example-rule formats.
18. Use explaining links to highlight relationship between ideas, steps in a process, etc.
19. Assist children to restructure their understandings to reflect more accurately what was intended by the teacher and/or task. Diagnose children's responses for misconceptions. Where misconceptions are evident re-explain, elaborate or expand on the information given to focus understanding.
20. Summarise information and pose questions which encourage children to think about the sequence of ideas, steps in a process or relationship between ideas and items of information.
21. Program use of the information, skill or strategy taught in meaningful, 'real-life' situations.
22. Emphasise 'when' and 'why' a particular procedure, technique, skill, process, etc. is useful.
23. Emphasise 'how' a particular procedure, technique, skill, process, etc. is used. Demonstrate or model the task.
24. Teach for awareness. Continually stress the nature of the task being taught, when it can be used and how it can be used.

Teacher Input (Modelling and Demonstration)

25. Model and/or demonstrate the behaviour you want the children to acquire.

Teacher Input (Clarity)

26. Speak fluently. Limit or avoid disjointed and garbled speech.
27. Use explicit language when explaining, demonstrating, and giving instruction.
28. Use consistent terminology to describe tasks.
29. Explain terms which are likely to be confusing to the children.
30. Structure task content so that more complex or abstract items are preceded by simpler, more concrete examples.
31. Use many and varied examples to illustrate the task.
32. Vary the volume and pace of speech to suit the situation.
33. Repeat instructions or explanations when necessary.
34. Ask frequent questions to check pupil understanding.
35. Answer pupil questions.
36. Provide a 'thinking pause' after information is presented and after a question is posed.
37. Show children how to remember and recall information.
38. Give sufficient time for practice.
39. Use visual as well as auditory stimuli and aids during class presentations.

Checking for Understanding

40. Ask questions frequently during teacher presentations.

Pupil Involvement

41. Encourage active and frequent involvement of all children in the class.

Pace

42. Maintain a brisk lesson pace.
43. Vary lesson pace according to the type of task, e.g. difficulty level, and stage of instruction, i.e. initial teaching, initial practice, maintenance.

Review

44. Quickly review, summarise and/or restate the task introduced in the lesson.

Guided Practice

45. Guided practice should be organised and directed by the teacher.
46. Design and present easy tasks for guided practice.
47. Guided practice should be structured to allow for a high level of successful practice.
48. Present a small number of task examples followed by immediate correction and feedback.
49. Involve all the children in practice activities.
50. Practise till the children are 'firm'.

Questioning

51. Maintain a high frequency of academic teacher questions throughout guided practice.
52. Vary the purpose of questioning to maximise pupil thinking and response opportunities.

53. Ask predominantly easy to moderately difficult questions.
54. Ask predominantly lower order (factual) questions.
55. Plan key questions to provide lesson structure and direction.
56. Ask questions that are clear and understandable.
57. Provide sufficient information for the children to draw on to answer questions.
58. Questions should be focused on a specific point or item of information.
59. Ask process as well as product questions.
60. Allow a period of 'wait time' before calling on children to respond to a question.
61. Redirect questions quickly and unobtrusively.
62. Distribute questions to as many children in the class as possible.
63. Limit 'callouts'.
64. Call on non-volunteers as well as volunteers to respond to questions.
65. Where appropriate 'follow-up' on pupil responses with further questions or comments.
66. Avoid repeating questions.
67. Avoid repeating pupil answers.
68. Avoid answering your own questions.
69. Avoid encouraging choral responses.

Reinforcement

70. Praise and reward should be delivered contingently.
71. Reinforce immediately after the behaviour occurs.
72. Initially reinforce every correct response.
73. Determine reinforcement on an individual basis.
74. Where possible use 'natural' reinforcers.
75. Use a variety of reinforcers.
76. Never use a stronger reinforcer than is necessary to get the job done.
77. Specify why praise (reward) is being given.
78. Show spontaneity, variety and other signs of credibility.
79. Know the performance criteria you want before reward becomes available.
80. Feedback during the administration of reward should provide the child with information about his/her competence (level of performance) and the value of the accomplishment (relative to other responses from children in the class).
81. Feedback during the administration of reward should highlight the aspects of task completion (the process of completing a task) and problem-solving which the child should value and appreciate for their efficient learning and learning to learn potential.
82. Feedback during the administration of reward should relate prior performance to present accomplishments.
83. Praise and reward statements should signal to the child that he or she should attribute their success to both effort and ability.
84. Praise and reward statements should focus on the child's enjoyment of the task in and of itself.

Corrective Feedback

85. Corrective feedback should be given to all children in the class irrespective of their motivational level or ability.
86. Corrective feedback should be given immediately after an error response.
87. In general, corrections should be non-evaluative and free of personal criticism.
88. Correct every response during the initial acquisition and proficiency stages of learning, i.e. during the teaching of new material and during initial practice on that material.
89. Corrective feedback should be task relevant, i.e. focused on how to correct the error, and not on managerial factors such as attention or motivational and attitudinal considerations.

90. Corrective feedback should provide a way for the child to improve performance.
91. Where appropriate use the model, lead, and test pattern of correction.
92. For responses which are correct but hesitant or partly correct, the correctness of the response should be acknowledged and reinforced.
93. Provide process feedback (an explanation of how the answer is obtained) for responses which are correct but hesitant or partly correct.
94. Answers which are incorrect due to carelessness should be corrected by giving the correct response and then moving on.
95. Where errors occur in tasks involving factual recall and knowledge, i.e. tasks where the answer cannot be reasoned out, correct by giving the appropriate response or redirecting the question to another child.
96. In instances where the child is not capable of making the response, where possible correct by modelling the response and prompting imitation.
97. Where possible, use sustaining feedback - feedback aimed at keeping the child working on the problem until it is solved.
98. Tasks that involve the application of a multi-step strategy should be corrected by prompting the child to use the strategy.
99. Where the child makes no response the teacher should probe by asking questions until some kind of response is given even if this involves the child saying 'I don't know'.
100. Mild punitive corrections may be justified on occasions.
101. Corrective feedback should ideally continue until the child has been given sufficient opportunity to re-work the task and to practise it.

Independent Practice (Seatwork)

Time allocation for seatwork

102. Allocated time for seatwork should not exceed 50 per cent of available lesson time.
103. No single segment of seatwork should exceed 15 minutes' duration.

Seatwork tasks

104. Seatwork assignments should involve previously taught tasks.
105. Seatwork tasks should be structured to ensure a high success rate.
106. The children should be required to make a definite response during seatwork.

Structuring and presenting seatwork activities

107. Seatwork assignments should be explained clearly and precisely.
108. Children should be given clear and reasonable limits for completing work.
109. Teacher expectations for the behaviour of the children should be explained before the activity begins.
110. The teacher should let the children know their work will be checked.
111. Provide 'back-up' or 'buffer' activities.
112. Have only one type of response per worksheet or task.
113. Use standard formats.

Monitoring seatwork

114. Circulate around the room.
115. Check all seatwork.

Management of seatwork

116. Keep interruptions to a minimum.
117. Position yourself so you can see the entire class.
118. Avoid prolonged contact with individual children or groups of children.
119. Keep all contacts during seatwork brief.
120. Move to that part of the room where disturbances are evident.
121. Minimise 'wait time'.

Closing the lesson

122. Restate the lesson's objective or purpose.
123. Review the tasks and activities completed in the lesson.
124. Assign and explain the homework task.
125. Outline what the next lesson will cover and explain how it is related to the just-completed lesson.

Classroom Management

Planning for classroom management

126. Formulate expectations for pupil behaviour prior to the start of the school year.
127. Translate expectations for pupil behaviour into rules and procedures.
128. Identify consequences for inappropriate behaviour.

Management at the beginning of the school year

129. Require children to complete work within the time allocated.
130. Timetable regular review periods to check children's work.
131. Frequently and systematically circulate around the room during seatwork.
132. Require all children in the class to participate.
133. Establish procedures for handing-in work and recording results.
134. Provide rapid and systematic feedback on work completed by the children.
135. Maintain a high level of academic task-oriented contacts with children.
136. Do not waste time on procedural matters.
137. Develop clear expectations for pupil behaviour and communicate these to the children through a set of rules and procedures.
138. Monitor children's understanding of rules and procedures.
139. Act immediately to correct inappropriate behaviour.
140. Provide specific feedback (praise and criticism) on children's compliance with rules and procedures.
141. Arrange desks so that children can easily face that part of the room where instruction is most often delivered.
142. Gain and maintain attention through techniques such as voice modulation, lesson pace, and movement.
143. Ease children into the day's lessons with tasks that are relatively easy, non-anxiety provoking, and which focus the children's attention on the major lesson task.
144. Forewarn children of transitions between activities and lessons.
145. Plan techniques for interrupting lessons (when absolutely necessary) with a minimum of disturbance to the momentum of the lesson.
146. Space directions for two or more activities to avoid information overload and confusion.
147. Require all unnecessary and potentially distracting materials to be removed from sight when the focus of attention is to be on the teacher.
148. Schedule seatwork in short periods rather than one long period.

Gaining and maintaining pupil attention

149. State what it is that will happen when children attend, e.g. 'Listen to me and you'll hear a story', 'Watch the board and I'll show you how to do it', 'Look and you'll see how I change the colour of the liquid'.
150. Use a simple, relevant cue, e.g. 'Listen', 'Look', 'Watch', consistently when calling for attention.
151. Pause after stating the cue word and the contingency, and wait for the children to attend.
152. Use a hand signal, e.g. hand up, to hold the attention of children momentarily while surveying the class with your eyes to see if all children are attending.

153. Praise children who are attending. Always state why praise is given, e.g. 'Good boy, Mark, you were the first to watch me', 'Linda, Sue and Jason were watching, very good'.
154. Do not direct your attention to children who are not attending. Bring them 'around' by praising a child near them who is attending.
155. Repeat the cue, e.g. 'Listen', then immediately present the task. The task, whatever it might be, is the pay-off for attending.
156. Ensure that what it is you want the children to attend to is worthwhile and rewarding.
157. Involve all the children in the lesson.
158. Vary voice modulation.
159. Move to that part of the class where disturbances are occurring.
160. Use touch (a hand on the shoulder or a pat on the head) to regain attention.
161. Place yourself in that part of the room where you can see all the children at all times.
162. Use a variety of interesting and challenging activities to break the monotony of instruction.
163. Vary the instructional medium (stimuli) used in the classroom.
164. Maintain eye contact with the class at all times.
165. Periodically require physical activity from the children.
166. Show enthusiasm for teaching.
167. Use humour periodically.

Installing and Maintaining an Effective Management System

Monitoring pupil behaviour

168. At the beginning of the school year focus on pupil compliance with directions and procedures.
169. Monitor pupil task completion.
170. Review written work and assignments frequently.
171. Continually look for attending behaviours.
172. Maintain eye contact with the class at all times.
173. Position yourself so that you can see the whole class at all times.
174. Scan the room frequently.
175. Move around the room during seatwork and guided practice.
176. Limit contact time with individual children or small groups of children.
177. Keep your lines of sight open.
178. Monitor commencement of work during seatwork.
179. Check work regularly.
180. Maintain records of children's performance and progress.
181. Observe and investigate the factors and conditions associated with misbehaviour.

Managing inappropriate behaviour

182. Act on inappropriate behaviour as soon as it occurs.
183. Monitor and act on work avoidance behaviour as soon as it is exhibited.
184. Intervene early when problems arise.
185. Avoid over-reaction and emotionality in response to misbehaviour.

Procedures for responding to inappropriate behaviour

186. Request that the inappropriate behaviour cease.
187. Establish and maintain eye contact with the misbehaving child until he/she is behaving appropriately.
188. State or remind the child (children) of the correct rule or procedure.
189. Ask the child (children) to state the rule or procedure. If there is evidence of lack of understanding state and explain the correct procedure.

190. Impose a penalty for rule violations. In the first instance this should normally involve getting the child to complete the task correctly.
191. Punish by withholding a privilege for children who deliberately violate a rule or procedure.
192. Change the activity when boredom is evident and off-task behaviour increases.

Establish Pupil Accountability

193. Establish pupil accountability by presenting clear directions, monitoring pupil work, correcting work, giving feedback, and asking the children to maintain a record of their marks and progress.

Teacher Clarity in Direction and Instructions

194. Anticipate likely problems in the assigned tasks and make a particular point of explaining these prior to task completion.
195. Practise good oral communication.

Wait Time, Dead Time, and Non-instructional Time

196. Minimise wait time, dead time, and non-instructional time during lessons.

PATHWAYS AND BARRIERS TO REFLECTIVE TEACHING IN AN INITIAL TEACHER EDUCATION PROGRAM

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INTRODUCTION

The Assumptions and Characteristics of the Program

The concept of reflective inquiry gained prominence in teacher education and development in the early 1980s through such initiatives as action research, clinical supervision, critical pedagogy and reflective teaching. The last-named form of inquiry was popularised by Cruickshank (Cruickshank and Applegate, 1981; Cruickshank et al., 1981) and Zeichner (Zeichner, 1981-82; Zeichner, 1983; Zeichner and Teitelbaum, 1982) who both developed and implemented reflective teaching programs for teacher education. Reports of both programs have been published by these researchers (Cruickshank, 1984; Cruickshank, 1985; Cruickshank and Armaline, 1986; Zeichner and Liston, 1986; Zeichner and Liston, 1987).

The term reflective teaching is used in teacher education programs to convey different meanings for different purposes. Cruickshank defines reflective teaching as the teacher's thinking about what happened, and thinking about alternative means of achieving goals or aims (Cruickshank and Applegate, 1981). Zeichner (1985) adopts a theoretically different direction by invoking Van Manen's three levels of reflectivity each of which employs different criteria for choosing a course of action. Zeichner (1985) concludes:

> A reflective teacher is defined in this literature as one who assesses the origins, purposes and consequences of his or her work at all levels. (p. 3)

In practical terms Zeichner's reflective teaching program sees knowledge as problematic; curriculum as reflexive, socially constructed and inquiry oriented; and self-renewing teacher educators as models of moral craftspersons.

While each of the programs could be said to be still in the early stages of experimentation and only recently developed, they have generated widespread interest among teacher educators (Gore, 1987). More importantly they have provided insights

into pathways or methodologies, as well as an indication of some of the barriers to practising reflective teaching in initial teacher education programs. This paper reports on another program which adopts ideas from both Cruickshank and Zeichner. The program involved student teachers enrolled in their first teacher education subject in an initial teacher education course in Human Movement Studies at the University of Queensland. The Queensland program is distinguished by the following characteristics.

Emphasis on reflection

In this program's interpretation of the reflective teaching concept, a greater emphasis was placed on reflection. Reflection was assumed to be more than thinking or student inquiry into practice, particularly teaching practice. It was conceived as a form of critique capable of challenging the institutional structures in which the students were working. The program was not, however, concerned solely with critical reflection, but with each of the three levels of reflection suggested by Van Manen (1977). These levels were reinterpreted in the program's conception as: reflection about or technical reflection; reflection on or educational reflection; and reflection through or critical reflection. Reflection at the respective levels therefore focused on technical skills (means), educational goals (ends) and critical purposes (moral-political ends).

The Queensland program emphasised shared and individual reflection at several points in the teaching process and this was regarded as necessary to the development of reflective teaching.

Teaching as interaction

Unlike previous programs which attempt to teach students to engage in reflective inquiry, the present program did not confine itself to simulated teaching experience only (as in Cruickshank's program). Nor did it emphasise the significance of teaching experience in schools (as in Zeichner's program). The program emphasised the concept of teaching both as praxis or intentional act (Phillips, 1981) and as interactive. The latter was understood as interaction in the students' everyday lives, their individual lives as student teachers, as persons and as members of society.

Students' interpretive categories

A corollary of the above emphasis is that in teaching student teachers to reflect, the teacher educator needs to consider very carefully how to help students to begin to reflect.

Hence, the program's perspective was similar in its goals to Zeichner's program (Zeichner and Liston, 1987): to create students who were 'willing and able' to reflect. The pathway selected assumed that rather than beginning with an ideological perspective foreign to students, namely a perspective based on critical theory, the entry point was understanding with a view to 'breaking experience' (Buchmann and Schwille, 1983). Only then (possibly after a lengthy process for some students at least, especially those whose technical rationality leads to overriding concerns for proficiency in instruction and class management in initial school experience) are students more likely to be willing and able to reflect critically.

The process of becoming critical

From the previous discussion it can be inferred that there is a developmental process involved in helping students to become critically reflective teachers. This process consists of a number of phases including student self-understanding within a group of peers, deciding on a conceptual position as orientation to critical reflection through praxis, and engaging in praxis as social action. The latter phase was the ultimate goal of this program but it was anticipated that not all or even many students would achieve it within the single subject unit. The first phase of self-understanding within a group of peers was emphasised in the Queensland program.

In proposing a developmental process, it was not assumed that phases were strictly chronological or logical for all students.

Students' knowledge and instrumental reasoning

It was intended that knowledge from the program be the product of moral political reasoning. However, the teacher educator cannot overlook the real concerns and needs of students when they enter a teacher education program. More often than not these concerns centre around the need to develop effective instructional techniques often with an emphasis on discipline, control and survival in the classroom.

The argument proposed for the program reported here is that at the point of entry to reflective teaching, the teacher educator needs to recognise forms of technical reflection as legitimate but subsumed by, and subservient to, critical reflection.

Reflection in context

Finally, while the program reported here sought to engage student teachers in all levels of reflectivity, the emphasis was on reflection in context which was not necessarily a teaching context. The emphasis on interaction in groups provided the foundation for developing the idea of teaching as an interactive activity. It was anticipated that this may have advantages over the traditional mode of introducing students to teaching through direct experience in schools where they 'may tend to accept existing conditions, patterns, and relationships as forming the boundaries beyond which one need not, or should not, trespass' (Beyer, 1984, p. 36).

Exploration of the relationships between the student (as individual) and society began with the contradictions in the tertiary institutional context. The purpose of focusing on the institutional milieu was to help students to decide personal and collective policy about forms of social action without engaging in it.

THE CONTEXT FOR THE STUDY

The Subject

HM115 - Introduction to Movement Education is the first subject in the Bachelor of Human Movement Studies (Education) (BHMS(Ed.)) degree program which directly addresses education or physical education. The central purposes of the subject are to introduce students to the core activity areas of physical education curricula (i.e. dance, aquatics, gymnastics, athletics, games) and to introduce them to education, teaching and schooling. Traditionally the subject has been taught with a strong 'practical' emphasis with the focus on subject matter. Teaching was 'learnt' from observing the master teacher (usually the lecturer) while acting as a student in his or her physical education classes.

In 1986 the subject was modified to shift the focus to teaching, with subject matter being considered integral to the process. Peer teaching and other group activities were designed in an attempt to facilitate authentic dialogue among participants through practical experiences of the teaching act. The intent was to implement a reflective teaching program, similar to that outlined in the previous section, in conjunction with the existing purposes of the subject.

The 1986 experience of teaching HM115 led to further changes in 1987, with the major features of the subject being as follows:

1. Peer teaching sessions: Students taught 15-20 minute lessons to a group of six or seven peers, who were asked to act naturally rather than to pretend that they were school children as is sometimes the case in peer teaching. The remainder of the fifty-minute class period was spent reflecting on the experience. The subject matter of lessons was specified by the lecturer but student teachers were left with all the decisions regarding specific content, teaching

strategy, etc. Students also wrote critiques of all peer teaching sessions.

In addition, photographs were taken in turn by one group member, of each peer teaching lesson. Students later examined the photographs and selected two or three for the photographer and teacher to comment upon. Thus within each group one student was the teacher, one was the photographer and the remaining students were the students.

2. A personal journal: Some guidelines were provided to assist students in the keeping of a journal (Holly, 1984; Walker, 1985) but they were encouraged to approach it in a manner which suited their own style, needs and interests. During the semester, four specific journal tasks were set:

   (i) Week 1: 'My career in teaching'. Students were asked to discuss their motives for wanting to become a physical education teacher, any alternative careers they were considering and their aims as a physical education teacher. They were also asked to describe the characteristics of teachers who were and were not 'the sort of teacher you would like to be'. Finally, they were encouraged to explore the meaning of the terms physical education, human movement studies, sport, play, recreation, coaching, and teaching.

   (ii) Week 7: Students were asked to identify a critical incident in their development as a teacher and person. They were encouraged to identify incidents which occurred within the subject but were free to discuss extraneous incidents.

   (iii) Week 9: Students were asked to use the photographs of the lessons for which they were the teacher as a starting point in addressing the following questions:

   - Is the teacher I am in these photos, the person I am?
   - Is the person I am, the teacher I hope to be?
   - Is the teacher I am/hope to be, the person society wants?

   (iv) Week 13: Students were asked to explore the following question:

   - What is a good teacher of physical education?

   No specific requirements or constraints were imposed on students' use of the journal for the remainder of the program. The journal was essentially a means by which students could explore their private thoughts and personal development. It was also the means of implementing the program's emphasis on interaction and collective experience. To facilitate the sharing of thoughts and experiences, selections from individual journals were typed to ensure anonymity and then distributed to all participants. Three such collections were printed during the semester.

3. A series of lectures, seminars, videos and readings: These were structured around the central purposes of the subject; however, questions were raised and contradictions highlighted throughout, in an attempt to facilitate reflection. A series of three videos of 'model' teachers was shown.

   Readings were also selected to encourage students to think more broadly about teaching: e.g. Eisner's The art and craft of teaching, Kemmis' Three views of education, Locke's Ecology of the gymnasium, Hoffman's Traditional methodology: prospects for change, Giroux's Teachers as transformative intellectuals.

The Students

Students generally take HM115 in the first semester of their second year at the University. Forty-six students (23 male, 23 female) enrolled in and completed the subject in 1987. A survey conducted during the first week of the semester provided some biographical information about each student.

As a group, these students could be seen as successful both academically and athletically, young, and of at least middle class origin. Although the BHMS(Ed) enrolment would suggest an aspiration to become physical education teachers, only 60 per cent of students came into the subject with an expressed interest in teaching, with others more interested in sport, physiotherapy, sports journalism and the recreation and tourist industries.

THE CONDUCT OF THE STUDY

A case study was conducted by the principal author who was also the lecturer of the subject. As such it was a participant observation study, with this author being a full participant in the conduct of the subject. However given the status and assessment role of the lecturer, the nature of the participation was quite different from that of other participants. The study was also an action research project in as much as plans and actions were modified throughout the program as a result of the observations and reflections of all participants. The second author acted as a critical friend to the study and restricted his involvement to discussions about the project with the lecturer and to limited contact with the students.

Data Sources

In order to understand students' experience of the subject and to monitor their development as reflective teachers, qualitative research methods were used to provide most of the data. Semi-structured interviews were conducted with twelve of the students who were selected because they appeared to be representative of certain subgroups within the class, or because they stood out as different in some way. A large quantity of data was also generated by way of the students' written work: journal entries, lesson critiques, photograph comments.

Three questionnaires were also used in association with the subject.

Data Analysis

Given the huge quantity of data gathered and the time involved in analysis, this paper represents a preliminary analysis only, focusing on student journals and interview transcripts.

The major purpose of this analysis of data was to begin to understand the varied responses that students made to the program intent of helping them to become critically reflective teachers.

FINDINGS

Any attempt to promote reflective teaching is likely to meet with a heterogeneity of responses. Students could be expected to, and in fact did, differ in terms of their general orientation to reflection and the focus of that reflection. In other words, they differed in terms of how they reflected and on what they reflected. Although each student's experience of, and commitment to, the program was unique, three main groups have been identified. In the following discussion of these groups, references will be made to individuals in an attempt to retain the richness of their personal experience.

A Typology of Reflectors

The three groups identified have been labelled 'recalcitrant reflectors', 'acquiescent reflectors' and ' committed reflectors'. Although presented here as ideal types, the shifting membership of each group and the dynamic nature of each student's experience should not be forgotten.

Recalcitrant reflectors

The students in this group rejected the need to reflect on teaching and failed to see the relevance of keeping a journal. Reflecting was seen as at best peripheral, and at worst irrelevant, to the task of teaching. Rosemary commented for example that 'marks should be on teaching, not reflecting' (25/3).* Students in this group consequently used their journals infrequently throughout the semester. In some cases when the journal was used it was not used as a forum for discussion of teaching/subject experiences but was instead used solely as a personal diary.

Other characteristics of the recalcitrant group were that most of them were male and for most of them teaching was not their major career aspiration.

Acquiescent reflectors

This group was by far the largest of the three groups identified and also the least homogeneous. It included students who would have preferred to resist but were afraid that it might mean their failure in the subject, and students like Bruce who commented: 'Being reflective takes effort, it's much easier to simply cruise along and do the minimum' (23/3).

Acquiescent reflectors used their journals sporadically, mainly when they thought that the journals had to be submitted. They were more likely to back-date entries to give the appearance of regular use than were students from the other two groups. They were also far more concerned about assessment and, as Gordon said, 'the journal suffered on [their] list of priorities because of its 5 per cent weighting' (4/6). University work was done by most of these students for the extrinsic rewards it offered such as receiving a particular grade and getting along with the lecturer.

Students in this group were also likely to 'stir' their more committed peers about their conscientious approach to the course, and to accuse them of 'crawling'. Such an attitude is typical of the 'anti-academic perspective' of physical education students reported by Helen Schembri (1976) in her case study of undergraduates.

As with the recalcitrant reflectors, instrumentality tended to dominate among these students with a 'how to get through this course' concern being paramount. Thinking about teaching and schooling was essentially a means to that end. Likewise, teaching had been selected as a career possibility largely for reasons such as the holidays, hours and opportunity to work outdoors in a sports-related occupation.

Committed reflectors

The students in this group were quite different from their recalcitrant and acquiescent peers. They enjoyed writing in their journals regularly, commented on their love of thinking and learning and like Peter ('stuff my marks, I'm doing what I want to do' (15/3)), tended to de-emphasise assessment. Instead they focused on the process of learning and reflecting.

All of the students in this category felt sure about teaching as their chosen career, a decision which may well have contributed to their commitment to the course and their success in it. Generally speaking, these students were better teachers and better scholars than students in the other two groups. (This statement is based on students' assessment of their peers by way of their critiques, as well as the lecturer's assessment.)

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* Pseudonyms are used to preserve anonymity. Citations are from student journals.

'Committed reflectors' were generolly more willing to express their views in front of their peers ond to foce the brunt of gibes obout 'crawling', 'brown-nosing' ond writing 'flowery crop'.

The ottitudes necessory for reflective thought which Dewey (1933) expounded - open-mindedness, responsibility ond wholeheortedness - were certoinly evident in these students. The focus of their reflection wos olso different from thot of their peers, os will be discussed in the next section.

The Focus of Student Reflection

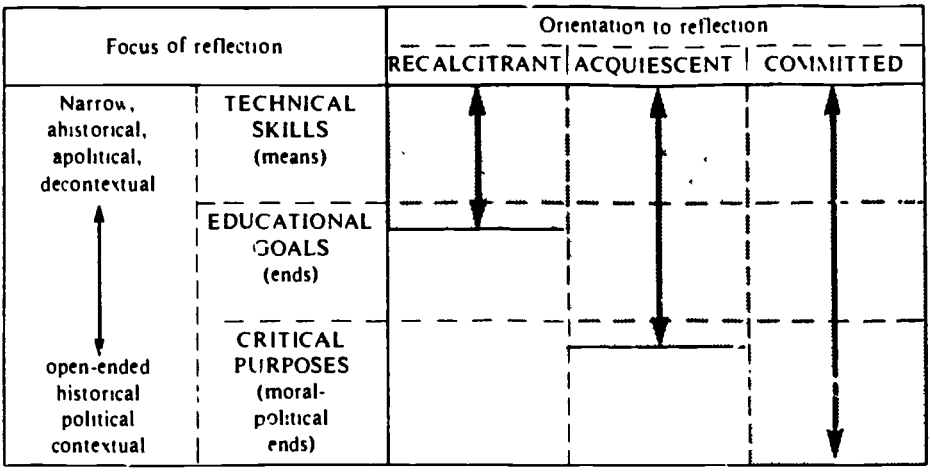
Given thot the mojority of students were engoging in their first formol oct of teoching ond thot oll of the students were engoging in the first formol oct of peer teoching, it is not surprising thot reflection obout technicol skills, questions of 'how to', dominoted during the eorly weeks of the subject. Discussions following peer teoching lessons, ond written critiques of those lessons, were olmost exclusively focused on such teoching skills os positioning, pocing, feedbock, instruction, demonstrotion, distribution of equipment, voice projection ond timing. Within two or three weeks, oll students seemed to hove understood the need for these technicol skills ond were oble to identify them in their own ond their peers' lessons.

Several students commented thot discussions ond critiques were becoming boring ond they were cleorly reody to extend their focus to other oreos. It wos ot this point thot the ottitude students hod toword the subject ond its reflective components become importont. The recolcitront reflectors were reluctont to extend the focus of their reflection except in rhetoricol or flippont woys. Students in this group were more likely to believe thot the most importont ospect of teoching wos thot 'kids were leorning' (Grohom, 9/5). Whot they were leorning ond whot methods were employed, were lorgely irrelevont.

In generol, the ocquiescent reflectors were concerned obout what ond how kids were leorning os well os being concerned with technicol skills. They supported the need to be oble to justify one's teoching ond to osk questions like 'why om I teoching this?'. However, students in this group tended to restrict their reflection to the school level. Occosionolly reference wos mode to 'the system' but their belief was essentiolly thot teochers' mojor concerns must remoin ot the level of their own clossrooms ond schools.

Committed reflectors volued the technicol skills of teoching, but tended to be more concerned obout their role os teochers in the brooder context of society. They ocknowledged the role of schools in reproducing the stotus quo ond believed in the need for chonge ond thot they could moke o contribution towords thot end. See Figure 1 for o summory of the discussion thus for.

Figure 1: The relationship between orientation to, and focus of, reflection



TOWARDS CRITICALLY REFLECTIVE TEACHING: FACILITATING AND IBHIBITING FACTORS

In attempting to provide explanations for the variability among students in terms of the extent to which they engaged in reflection, let alone critical reflection, three major factors appear to be significant. These are: (1) structural conditions and relations, (2) the role of the teacher educator, and (3) individual biographies. This paper will concentrate on the first two.

Structural Conditions and Relations

Given the vocational orientation, the success in sport, physical education and school generally, and the background in science as opposed to the arts and humanities, which characterised the students entering the program, it was evident that 'social structures' would be in place which would mediate against the development of critical reflection. Some unlearning was expected to be prerequisite to the adoption of a more critical perspective.

However, the structure of the Bachelor of Human Movement Studies (Education) degree with its strong emphasis on scientific study, moderate emphasis on professional preparation and almost perfunctory approach to the social sciences and humanities (e.g. there is no philosophy component to the course) can be seen to reinforce the entering orientations of the students. The comments of some students indicated that they were acutely aware of the science emphasis in the Department.

Many students commented that HM115 was quite different from anything they had experienced. Students who enjoyed and valued this 'new' approach to university teaching like Annette who 'came to lectures because I wanted to, not because there was an exam to sit' (4/6) (there was a test worth 10 per cent in week 10) and who liked the requirements of the subject, 'it gives me a buzz to write freely and uninhibited like this' (Peter, 28/4), can generally be identified as within the 'committed' group. For some, HM115 clearly resonated with their own uneasiness about certain features of school life: 'I never liked the "marks oriented" nature of school' (Peter,

27/4). Other students would clearly have preferred simply to be given 'a recipe' for good teaching, opportunities to practice those skills, and experience in the 'real world' of teaching.

The scientistic nature of much of the BHMS(Ed.) degree program and a traditional approach to university teaching does not characterise all subjects other than HM115. In fact, approximately 60 per cent of students in the program were concurrently enrolled in HM220 (Sociology of Sport), a subject in which the lecturer deliberately debunks students' views about the glory and political neutrality of sport (see McKay and Pearson, 1984). Several students commented on the links between the two subjects.

I believe that HM220 facilitated the development of critical reflection for some students. This finding highlights the importance of teacher educators engaging with their own peers to work collectively towards the development of critical reflection. The impact of consistent messages from a number of lecturers in different subjects is clearly important in breaking with students' everyday experiences. Such action should not end at the lecturer level however but also operate at the institutional policy level and with the external community.

The structure of HM115 itself appears to have been important in encouraging students to reflect. The subject was organised in such a way that students were forced to discuss teaching on the basis of their experiences of peer teaching and were also forced to write regularly, if not in their journals, then at least in writing critiques of the 25 peer teaching lessons in which each student participated. Even if the focus remained a technical one, students at least had to reflect on what occurred and to make some evaluative comment.

Of all the strategies used in HM115, I believe the journal was the best forum for critical reflection, simply because it was private. This is somewhat contradictory to the notion of collaboration and the development of communities of critical scholars. However, the strong influence of peer pressure and students' lack of confidence in voicing their opinions in public meant that many of them revealed a side of themselves in their journals which was not always apparent in their public interactions. Peer pressure and competition appeared to be important features of the students' 'everyday lives', forming a social structure which militated against the breaking with experience postulated as prerequisite to critical reflection.

The assessment requirement, not only in HM115 but in the students' entire program, clearly played a part in inhibiting critical reflection. Most students naturally developed a list of priorities using criteria such as the weighting of each component of assessment and the perceived difficulty of the work involved. Some students were able to 'see' beyond assessment, a factor which seemed to facilitate their tendency toward critical reflection. Others, like Bob, who thought I was brave to have 'the test' when there were four weeks of lectures to go (30/5), remained trapped within the instrumentality which seems to be reinforced by the structure of university courses.

Given the importance of assessment in the students' worlds, action could have been taken, and should be taken in future, to use more democratic forms of assessment in HM115. An attempt was made to negotiate the assessment requirements of the subject with the students. However, they demonstrated a lack of experience and knowledge basis from which to make choices. In order to highlight the contradictions in tertiary institutions and the possibility for transformation, students need to experience teaching, and in particular assessment, which is structured in a way that is educationally and morally sound. Failure to act on this opportunity with respect to assessment might have been a major weakness in the teaching of the program to date.

Another organisational feature of HM115 which was used in the hope of stimulating critical reflection, may well have had an inhibiting effect. Each photograph taken by students in the peer teaching lessons captured only an instant of the lesson. As a

result, the photographs tended to draw students' attention toward the minutiae of the experience, toward the visible features of the lesson, such as the teacher's positioning/stance, the apparent attention of students and so on. Hence they tended to directly promote technical rather than critical reflection. This is not to suggest that photographs lack the potential to be used in a critical way. Rather, the time available to work with the photographs was so restricted that students did not address issues beyond the technical. The exception to this was when the photos were used in Journal Task 3 whereby questions were asked which encouraged students to use the pictures as a starting point for discussion of themselves and their future role as teachers in society. By using the photos in this way, time was created for reflection which was not possible on a regular basis.

Time was certainly a major barrier in the development of critical reflection. As mentioned earlier, reflective teaching was not one of the central purposes of HM115 and although many opportunities were used or created for the development of reflective teaching, time was limited. Furthermore in the context of the entire degree (BHMS(Ed.)), HM115 represents the important initial introduction to teaching, but is only a small part of what students will have completed by the end of the fourth year. The long-term impact of the program will therefore need to be researched.

The Role of The Teacher Educator

'Unless reflective of their own endeavours, teacher educators will undermine their message by example' (Gore, 1987, p.38). The data suggest that my role in this program was important at two levels: (1) the formal level whereby the focus of students' reflection was at least partially influenced by the experiences I engaged them in as their lecturer, and (2) the interpersonal level whereby empathy and openness helped students gain the confidence and trust to freely express their opinions.

My formal teaching and the learning experiences I presented to the students were influential in shaping students' perceptions and conceptions of reflection. My own definition of critical reflection altered during the program as a result of my intellectual growth and practical experiences both within and outside of the subject. Because I was not attempting to 'teach' students about reflective teaching, but was rather hoping to work with them through practice toward a definition of critical reflection, transitions in their understanding were expected.

When this program was conceived near the beginning of 1986, my approach to reflective teaching was essentially and simplistically 'anti-technocratic'. It was specifically a reaction against Cruickshank's approach to 'reflective teaching' (see Gore, 1987). By the time this study commenced, I believed that the focus of reflection must move beyond the technical, but I was not sure where to. Heavily influenced by Zeichner's attempts to teach students to reflect, I was keen to enhance students' critical reflection by encouraging them to ask questions such as 'Why do we do this?', 'What purposes does it serve?', 'Whose purpose does it serve?', 'Who benefits?' and so on. Towards the end of the program I arrived at a much clearer notion of critical reflection as I began to understand it as political reflection (and action) in the sense used by Aronowitz and Giroux (1985) in their discussion of transformative intellectuals. Students were introduced to these ideas in the final two weeks of the program.

In future, I believe such ideas could and should be introduced earlier in the program so that students who could not see the possibility for transformation against the weight of institutional structures may have been helped. More time to discuss notions of transformation and social action would appear necessary in overcoming this barrier. Nevertheless although I feel that I could have achieved more in the program, it is clear that the substance and manner in which I taught contributed to students' willingness and ability to reflect, and in some cases, reflect critically.

In terms of the interpersonal relationships established with the students, it appears that I was able to help some students, at least, to engage in critical reflection by being seen as approachable and open to their ideas.

One of the major problems in understanding students' responses to the program is the extent to which their behaviour and statements can be taken as authentic. Some deception was clearly being attempted when students did such things as back-dating their journal entries and encouraging other students to feign 'conversion'. Such actions were most likely to come from acquiescent reflectors whose major concern was getting through the course with a desirable grade. Thus although my relationship and approach may have had a facilitating effect, for some students the structual element of assessment may have been more powerful in determining their behaviour.

Although difficult to discern, the extent to which I was perceived to be an exemplar of reflective teaching also seems important. It was very encouraging that in a questionnaire completed at the end of the course, 81 per cent of students disagreed with the statement 'the lecturer does not practise what she preaches'.

Students' perception of the pedagogical relationship which was developed with them may also have been important. For some students being in an authentic pedagogical relationship in which both teacher and students were giving of themselves and learning together may have facilitated their willingness and desire to reflect.

Finally it is difficult to assess the extent to which my youthfulness, personality and gender were important in determining the relationship which developed with the students. However in order to fully understand the role of the teacher educator, researchers may need to explore systematically these factors.

CONCLUSIGN

This paper reported the initial phase of data analysis from a study of a reflective teaching program operating at the University of Queensland. Although in its very early stages of development, we believe that the program was successful in its aim to facilitate reflective teaching by students in the first subject of their teacher education program.

The program of reflective teaching was not designed from first premises, but was rather imposed upon a subject which had other purposes and which was already scheduled. Had the reflective teaching program been designed as part of a new subject its form and substance might have been quite different. Nevertheless this study has demonstrated that it is possible to modify an existing teacher education subject in a way which facilitates reflective teaching in conjunction with the central purposes of the subject.

Contrary to the stance taken by advocates of 'personalised' teacher education (Fuller, 1972) we have demonstrated that students can engage in reflection, and indeed, critical reflection, even at the initial stages of their teacher education. The study revealed that even earlier exposure to the ideas and language of transformation was possible and desirable. In part, critical reflection may have been enhanced by the use of peer rather than school teaching experience whereby management, discipline and survival concerns were minor. Such concerns can still be expected to arise when the students do enter the schools as student teachers. However, we believe that the timing and context of the Queensland reflective teaching program may prove crucial in breaking with students' experience of what schools and teaching are about and as a result, creating the possibility for change.

The findings of this study highlight the role of individual agency in teacher education programs. The 'typology of reflectors' developed through attempts to understand students' interpretive categories, illustrated the range of responses individuals have to the same program - a picture which no doubt resonates with the experiences of other

teacher educators and teachers generally. The links found among students' desire to teach, commitment to reflection and ability as teachers may have implications for the criteria used in selecting students for teacher education programs.

The timing of the program and the emphasis on unravelling students' understanding of reflection may increase the likelihood of students becoming critically reflective teachers. It is anticipated that students will not only continue to reflect about, on and through teaching as they continue through their teacher education program, but that their understanding of the various levels of reflectivity might assist them in adopting a particular orientation to reflection (critical). The acceptance of a critical orientation is to refute other orientations (technical) but this does not imply that only one level of reflectivity will be used at any one time (Breda and Feinberg, 1982).

The success of the program was clearly mediated by certain institutional and social structures. As was demonstrated in the discussion of the link with the Sociology of Sport subject (HM220), an important way of overcoming such a barrier is to work with colleagues to present consistent messages to students across subjects, throughout their degree program.

The consistency of messages within the subject is also crucial. Thus, as discussed earlier, changes should be made in the future teaching of the program to demonstrate alternative and more democratic forms of assessment. Other reorganisation is also desirable particularly with respect to creating more time for the use of photographs so as to increase their critical rather than technical potential.

The program of reflective teaching studied in this paper appears to have advantages over the other widely known programs developed by Cruickshank and Zeichner. As such, we hope that this study will be viewed as a contribution to the task of reflecting on, and improving, teacher education programs in Australia and elsewhere.

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USE MADE OF KEY ELEMENTS OF SECONDARY MATHEMATICS CURRICULUM UNITS BY GRADUATES OF BRISBANE COLLEGE OF ADVANCED EDUCATION DURING THEIR FIRST YEAR OF TEACHING

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INTRODUCTION

Rationale

The rationale for this study was:

- All pre-service students of secondary mathematics education at Brisbane College of Advanced Education (BCAE) take curriculum units that contain elements to prepare them for the teaching of mathematics incorporating modern methods. These students constitute the majority of new secondary teachers entering the workforce in Queensland.
- These methods may not be widely practised in existing classroom situations.
- Numerous problems and concerns regarding the effectiveness of present methods have been noted.
- The impetus for change must come from new graduates entering the profession.

Objectives

The objectives of this study were:

1. To identify the key elements and objectives of curriculum units MA 2054 and MA 2055 (Mathematics Curriculum 1 and 2, Junior Secondary).
2. To determine to what extent these elements are put into practice by recent graduates of BCAE in their first year of teaching.
3. To compare the practices of teachers with mathematics as a Principal Teaching Area (PTA) with those who have mathematics as a Second Teaching Area (STA).

4. If necessary, to determine any reasons for impediments in the classroom to the implementation of the curriculum elements and to examine the implication of these for the units.

Audience

- Board of Teacher Education
- Tertiary mathematics educators
- Members, course advisory committees, pre-service mathematics teacher education courses and units
- Mathematics Education Research Group of Australia (MERGA).

Significance of Project

If we accept the reason given by Burghes (1985) for the lack of implementation as 'lack of training', we must ask whether or not training in itself will remedy the situation.

In view of the studies by Clarke (1984), it would appear that implementation of these elements into the classroom must come from new graduates, the majority of whom in Queensland take these units at BCAE.

Any significant differences between PTA and STA graduates may have implications regarding the teaching of these units, since at present, PTA and STA students are in separate groups.

Units are subject to a five-yearly review and information from this study will provide information of use in the next review.

The use of concrete materials in mathematics classrooms is now an accepted necessity. Usiskin (1985) states 'materials must be available'. It is worthwhile to determine whether or not availability of materials is an impediment to the implementation of unit objectives.

ADMINISTRATION OF PROJECT

Determining the Key Elements

To determine those elements of the units that best define the units, a questionnaire was administered to all lecturers who taught courses of either unit in semesters 1 or 2 of 1984.

Lecturers were asked to use the criteria of 'time and energy' in assessing the elements.

Although 'exposition, consolidation and practice of fundamental routines' are clearly elements of curriculum units, these were deliberately excluded from the list of key elements. In view of the results of the research by Clarke (1984) it was thought that the inclusion of these would weight other responses so heavily as to obscure the relative extent of use of the other elements. It is assumed that 'exposition, consolidation and practice of fundamental routines' is practised a great deal by all teachers surveyed.

Trialling of Questionnaires

All program graduates, both PTA and STA mathematics, who were currently teaching

in state high schools were identified with the help of Personnel Services, Teacher Establishment, Department of Education (total = 76).

From the population a sample of nineteen was selected for the trialling of the questionnaire. An attempt was made to stratify the sample according to PTA/STA and city/country.

The questionnaire incorporated the fourteen key elements identified from the results of the questionnaire to lecturers, and a list of possible impediments to their implementation.

A copy of the questionnaire and covering letter was sent to each teacher in the trial.

Of the nineteen teachers in the trial, sixteen responded. Five had taught no mathematics during the first semester. Of the remaining eleven, the four metropolitan teachers and the four closest country teachers were selected for interview in person by the author in July 1986.

As a result of these interviews a final revised questionnaire was constructed.

Data Collection: Final Questionnaire

The final questionnaire together with the covering letter was mailed in November 1986 to the seventy-six teachers identified. A return self-addressed stamped envelope was included. A number of 'reminder' telephone calls were made in early December. Two questionnaires were returned unopened 'not at this address'. Details of the seventy-four teachers who comprised the population are shown below in Table 1.

Table 1: Details of population and response rates

	Population	No. returned: Teaching maths	No. returned: Teaching no maths	Total	Response rate
STA	57	33	15	48	84%
PTA	17	9	2*	11	65%
TOTAL	74	42	17	59	80%

* May be teaching senior mathematics Maths I/Maths II.

The number of semester classes of mathematics taught by students whose second teaching area (STA) was mathematics, according to principal teaching area (PTA) is shown in Table 2. Table 3 shows the number of mathematics classes taught by teachers whose PTA was mathematics.

Table 2: Number of semester classes taught by STA mathematics teachers, according to principal teaching area*

PTA	0	1	2	3	4	5	6	Average
Commerce	6	3	2	1	-	-	-	0.83
Science	3	4	1	-	3	-	1	2.00
Home Economics	1	3	2	-	3	-	-	2.11
Physical Education	2	3	1	1	1	-	-	1.50
Art	3	1	1	1	-	-	-	1.00

* In addition to the teachers represented in the table, one STA mathematics teacher had taken an 'other' subject as a PTA.

Table 3: Number of semester classes taught by maths PTA teachers

Classes (N)	0	1	2	3	4	5	6	7	8	9	10	Average
Teachers (N)	2	-	-	5	2	-	1	-	-	-	1	4.33

For each subject which they taught, respondents were asked to indicate the extent to which they employed a number of methodologies in their mathematics teaching. The scale used was: 1 = not at all, 2 = occasionally, 3 = regularly, 4 = a great deal. Respondents were instructed to ignore those methodologies or elements that they considered were not relevant to a particular subject.

For each element, the arithmetic mean was calculated, weighted according to the number of classes taught. The mode was also noted in cases where there was a sufficient number of responses.

Respondents were also asked to rate, on a five-point scale, the extent to which a number of factors had been an impediment to implementing t' methodologies. Not all respondents completed this section either in full or at all. Many indicated only those factors that were Partly-Definitely an impediment, leaving blank others.

RESULTS

Discussion

Before attempting to analyse these results, a number of points are noted.

Firstly, in view of the assumption that 'exposition by the teacher, consolidation and practice of fundamental skills and routines' will be practised a great deal by all, and in view of the numb · of elements identified it would be unrealistic to expect most to be employed 'regularly' or 'a great deal'. Thus, a mean of 3 or more would be relatively high.

Secondly, a number of elements are clearly not appropriate to all of the mathematics subjects of the survey. Whilst respondents often ignored those as instructed, others

responded 'not at all', thus tending to lower the overall average. A breakdown of responses by subject follows in order to consider those elements that are more relevant to each subject.

Thirdly, the four-point scale will not have the same meaning for all elements. For example, for elements 2 'the use of field work and outdoor activity' and 8 'the use of the newspaper as a teaching aid', a response of 'occasionally' may be considered as relatively high whereas for element 6 'the use of the handheld calculator', a response of 'occasionally' is relatively low. Thus, the results are better considered on an item-by-item basis as well as for each subject area.

Extent of Use of Methodologies

A summary of the responses regarding use of the methodologies is shown in the appendix. The overall weighted mean across all elements was 2.2. The results for each mathematics subject area are discussed below.

Year 8 mathematics

The overall balanced mean for Year 8 mathematics classes was 2.1.

Most elements show a mode of '2' ('occasionally'). Whilst this may be viewed as a reasonable extent for some elements, the author views the responses for a number of elements with concern. These include:

Element 1: The use of concrete materials to develop concepts in (a) numeracy and (b) measurement. Although the modal responses are '2' and '3' respectively, the number of responses '1 = Not at all' represents approximately 25 per cent of the classes taught. In the teaching of geometry (1(c) and (d)) this figure rises to over 40 per cent.

Some concern is also expressed at the response to item 1(e) Algebra (mean: 2.3, mode 2), since all respondents have participated in workshops on the use of concrete materials in the teaching of introductory algebra with particular reference to Year 8. On the other hand, some satisfaction may be obtained from the fact that the majority of respondents do use concrete materials for this topic even if only occasionally.

Element 6: The use of the handheld calculator. In view of the general recognition of the calculator as an invaluable teaching aid, and of the fact that all respondents have had workshops on this topic, it is of great concern that over 40 per cent of the Year 8 classes received no exposure at all in this field. It is worth noting also that those who do use the calculator do so 'regularly' or 'a great deal' rather than 'occasionally'. This would seem to be in agreement with observations from Part D of the questionnaire (impediments) in which 'school policies' were cited in eleven instances as a cause of impediments.

Other elements for which the extent of implementation may be a cause for concern include 4, 7 and 9, each with a mean response of approximately 2, which is viewed as relatively low for these elements.

Responses to element 3 are encouraging and would imply that respondents are constructing and using their own materials on a regular basis.

Year 9/10 general mathematics

The overall balanced mean was 2.3.

Again, element 6 'the use of the handheld calculator' is a matter for concern.

Though the responses are an improvement on the Year 8 responses, it is noted that nearly one-third of these classes make no use of the calculator.

Elements 1(c), (d) and (e) show a similar pattern to the Year 8 responses and are likewise a cause of concern.

For most other relevant elements the mean response for general maths is higher than that for other subjects, and would seem to represent an acceptable level of implementation.

Year 9/10 ordinary/advanced mathematics

The overall balanced mean was 2.2.

It is interesting to note that the responses to element 6 are now considerably higher than for Year 8 or Year 9/10 general mathematics (mean = 3.1). No other major differences are observed.

Social mathematics

Understandably, a number of elements are not relevant to this subject. This, together with the smaller numbers of classes taught makes generalisations and comparisons difficult. However, it is worth noting that element 6 (calculator use) is employed 'a great deal' in all twelve classes.

Comparison of PTA and STA Mathematics Teachers

Overall, there are a few notable differences between teachers with mathematics as their PTA and those with maths as their STA.

Calculator use has a mode of '1' for PTA teachers and '4' for STA teachers. However, the means of 2.4 and 2.8 respectively show that this difference may not be so great and furthermore, as we have already observed, the implementation of this element varies greatly with the year level and class.

STA responses to all items of element 1 'the use of concrete materials' as well as elements 3(a), 4, and 5(a), show a higher mean.

The mean response for PTA is higher for items 3(b) and 9.

Thus overall, it would appear that STA teachers implement the elements to a greater degree than PTA teachers, though this difference may be related to differences in subjects taught. Thus we need to observe the responses by year level before commenting further.

Year 8 mathematics

Overall balanced means: PTA - 2.2
STA - 2.1.

STA responses are noticeably higher for elements 1(d), 2 and 6. PTA responses are noticeably higher for element 9 'techniques of problem solving'.

Year 9/10 general mathematics

Overall balanced means: PTA - 2.0
STA - 2.5.

A number of noticeable differences are observed. For items 1(a), 1(b), 1(f), 3(a), 4 and 6 it would appear that STA teachers implement these elements considerably more than their PTA counterparts. However, it must be noted that the number of PTA classes is small.

Year 9/10 ordinary/advanced mathematics

Overall balanced means: PTA - 2.2
STA - 2.2.

Again STA responses to items 1(b), 1(c), 1(e), 6 and 9 are noticeably higher than the PTA.

Social mathematics

Due to small numbers it is not possible to comment on any observed differences.

Impediments to Implementation of Methodologies

Clearly the greatest impediment to implementation is seen as lack of materials and resources. This is consistent with the relatively high response to element 3 of Part C, 'construction and use of teacher-made materials', and with the common comments relating to lack of time available for preparation.

There is also considerable dissatisfaction with the quality of textbooks available, though only eleven consider this as 'definitely' an impediment.

Very few consider lack of support from either colleagues or administrators as a factor.

Items 5 (class size), 6 (class management), 7(a) (length of class period) and 7(b) (periods available for work program) were each indicated by fifteen or more respondents, with a number commenting that class size and management were closely related.

Of the eleven responding to item 8, 'school policies', nine commented that this referred specifically to the use of calculators.

It is interesting to note that very few respondents considered insufficient knowledge of either methodology or content to be a definite impediment.

A listing of the items in order of the total number of respondents perceiving the item as a partial or definite impediment to the implementation of the methodologies is shown in Table 4.

Table 4: Impediments to the implementation of the methodologies

Rank	N	Item	
1.	34	1	Lack of materials/resources
2.	21	2	Quality of textbooks
3.	18	5	Class size
4.	17	7(b)	Periods available for work program
5.	16	6	Class management
6.	15	7(a)	Length of class period
7Equal	11	8	School policies, e.g. use of calculators
7Equal	11	9(i)	Insufficient knowledge of methodology
9.	8	9(ii)	Insufficient knowledge of content

IMPLICATIONS

Use of the Methodologies

Overall, the responses imply that most of the key elements of the units are employed to some extent by the respondents.

As mentioned previously, it is more appropriate to consider the responses to each element than to try to draw overall implications. These responses are discussed below.

1. The use of concrete materials to develop concepts

(a) Numeracy

This was practised to a greater extent with the General Maths and Year 8 classes than with the others. The implication here is that this is consistent with the methodology as concepts in numeracy are developed more in these subjects. However, the results were felt to be relatively low, especially at the Year 8 level. This may relate to responses concerning impediments which show that 'lack of materials' is a major factor. However, further research would be necessary to determine this.

While the responses indicate a relatively low degree of implementation, the fact that a large proportion of respondents are using concrete materials to some extent may be seen as encouraging.

(b) Measurement and (c), (d) Geometry

Although the results imply that materials are being employed, the nature of the concepts is such that, in the opinion of the author, they should be employed to a greater extent than is indicated.

Again further research may be necessary to determine the causes of impediments to implementation of these elements since neither 'lack of materials' nor 'lack of knowledge of content/methodology' is likely to be a major factor.

(e) Algebra

Overall, the use of concrete materials in the teaching of algebra is not widely

implemented. Since the use of these moteriols in the teaching of olgebro, especially ot the introductory level, is an importont element of the curriculum units, further attention may be necessary. On the other hand, the foct thot 41 of the 72 respondents indicoted that moterials have been used, if only occosicnally, may imply a relotively acceptoble degree of implementotion.

(f) Applications

The results imply an acceptable degree of implementotion for all subjects.

2. Field work ond outdoor activities

These are employed to some extent by most teachers for all subjects. Although this moy be seen as encouroging, o large number of 'not at all' responses still occurs and moy be o cause for concern.

3(a) Construction ond use of teocher-mode oids ond/or games

These are employed occasionally by most teochers for all subjects.

3(b) The use of teacher-prepared hondouts ond worksheets

This is employed to the greatest extent of oll elements identified, being used 'regulorly' or 'a greot deol' by the majority of respondents. This moy be reloted to the response thot 'quality of textbooks' was the second ronking foctor impeding implementation. However, the nature of the handouts ond worksheets wos not explored and it is possible thot these moy be merely o substitute for textbook questions.

4. Techniques of discovery leorning

A mean response of 'occosionolly' is viewed os o relatively low extent of implementotion. It may imply thot teochers do not consider 'discovery leorning' os a mojor methodology in mathematics teaching. Curriculum units moy need to give greater attention to the use of this methodology especially ot the lower year levels.

5. Selecting strotegies for low ond high ochievers

It would oppear thot this is employed to o reasonable extent though further reseorch would be necessory to determine the nature of the strotegies.

6. Calculator use

As noted previously, this is on area of greot concern in all subjects except Sociol Moths. In the junior grades, the use amongst ordinory and odvonced classes is greater thon omongst general mathematics closses and the use omongst Yeor 9/10 is greater thon omongst Yeor 8. This moy imply thot teachers do not perceive the colculator as on oid in conceptuol development. Of the thirty-nine Yeor 8 classes, twenty-three responded with 'occosionally' or 'not ot oll'. Yet o totol of only eleven stoted 'school policies' os on impediment. This moy imply that curriculum units need to give greoter ottention to the use of the colculator in developing concepts in mathemotics, especiolly ot the lower yeor levels.

7. Verbolisation of concepts/meaningful discussion

The results imply thot this is employed to on acceptoble extent though there is some concern thot the leost extent of use is at the Yeor 8 level where it moy be the most important.

8. Use of the newspaper as a teaching aid

   A mean overall response of 'occasionally' is viewed as a very reasonable extent of implementation.

9. Techniques of problem solving

   These are employed to a reasonable extent in all the subjects.

Comparison of PTA and STA Teachers

Overall, the results indicate that STA teachers implement a number of elements to a greater degree than PTA teachers. When broken down into year levels, these differences persist, and were particularly noticeable in the General Maths classes. This may imply that PTA students in the curriculum units require more attention to the teaching of the earlier year levels and lower-ability pupils. However, due to the small number of classes in some categories further research may be necessary to determine this.

Impediments to Implementation

The major factor impeding implementation is clearly 'lack of materials and resources'. This is in agreement with Burghes (1985). However, in contrast to Burghes' comments about practising teachers, it would appear that recent graduates do not view lack of training in either content or methodology as an impediment. This is encouraging from the point of view of those involved with the teaching of the units and implies that the emphasis placed on the key elements should continue. However, the relatively low degree of implementation of some of the key elements that require little in the way of materials or resources may imply that some respondents do not wish to employ these elements. Further research is necessary to determine this.

The author notes with particular concern the number of respondents indicating 'school policies' as an impediment to calculator use. This is viewed as an issue which has implications for those with the authority to determine and implement such policies.

There would appear to be little evidence that lack of support from colleagues or administrators are regions of concern.

Further research is recommended to determine:

1. the causes of the relatively low degree of implementation of some key elements that require little in the way of materials or resources;
2. the nature and content of teacher-made worksheets and handouts;
3. the nature of impediments to calculator use other than school policies.

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APPENDIX

A. Summary of responses regarding extent of use of teaching methodologies

	YEAR 8 MATHS			YEAR 9/10 GENERAL MATHS			YEAR 9/10 ORDINARY/ADVANCED MATHS		
	N	Mode	Mean	N	Mode	Mean	N	Mode	Mean
1. The use of concrete materials to develop concepts in:									
(a) Numeracy	41	2	2.0	14	2	2.4	19	1	1.4
(b) measurement	39	3	2.4	15	3	2.5	18	2	2.3
(c) geometry (inductive/deductive)	31	2	2.0	12	1.5	1.8	16	2	2.2
(d) geometry (transformational)	31	1	1.6	14	1	1.4	14	1	1.7
(e) algebra	34	2	2.3	14	1	1.4	18	2	2.0
(f) applications of mathematics	36	2	2.0	14	2	2.5	18	2	2.2
2. The use of field work and outdoor activities	27	1.5	2.3	10	2	2.0	18	2	2.0
3.									
(a) The construction and use of teacher-made aids and/or games	36	2	3.1	15	1	2.2	21	2	1.9
(b) The use of teacher-prepared handouts and worksheets	32	4	3.1	11	4	3.3	20	2	3.3
4. Techniques of discovery learning	32	2	2.0	15	1	1.7	20	2	2.0
5. Selecting strategies for:									
(a) slow learners/learning disabled	32	2	2.2	13	1	2.0	20	2	2.4
(b) high achievers/advanced pupils	31	2	2.3	9	1	1.8	18	2	2.0
6. The use of handheld calculators	39	1	2.2	17	3	2.6	18	4	3.1
7. The verbalisation of mathematical concepts - meaningful discussion either teacher/pupil or pupil/pupil	36	2	2.0	17	2	3.0	19	3	2.8
8. The use of the newspaper as a teaching aid	36	2	1.6	15	2	2.3	20	1.5	1.5
9. Techniques of problem solving	40	2	2.1	15	3	2.6	20	2	2.3

Scale: 1 = not at all, 2 = occasionally, 3 = regularly, 4 = a great deal

B. Frequency distributions for selected items

	YEAR 8 MATHS				YEAR 9/10 GENERAL MATHS				YEAR 9/10 ORDINARY/ADVANCED MATHS			
	1	2	3	4	1	2	3	4	1	2	3	4
1. The use of concrete materials to develop concepts in:												
(a) Numeracy	13	20	5	3	2	8	4	-	12	7	-	-
(b) Measurement	10	10	12	7	-	6	8	1	3	9	6	-
(c) geometry (inductive/deductive)	10	15	4	2	5	5	1	1	3	8	4	1
(d) geometry (transformational)	16	11	4	-	10	3	-	1	6	4	3	1
(e) algebra	11	14	7	2	10	2	1	1	4	10	3	1
(f) applications of mathematics	6	17	12	1	-	9	4	1	4	9	2	3
6. The use of handheld calculators	17	6	9	7	5	1	6	5	1	5	3	9

Scale: 1 = not at all, 2 = occasionally, 3 = regularly, 4 = a great deal

AN EVALUATION OF BACHELOR OF EDUCATION CURRICULUM STUDIES

Report of a Pilot Study

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INTRODUCTION

The Board of Teacher Education's recent (1986) evaluation of the Bachelor of Education degree studies offered in Queensland was directed in general terms to the initial question 'What are the effects of the investment in in-service education for teachers and children?'. The cynics had been saying, particularly in budget discussions on campuses such as mine, that the major and perhaps only consequence was in the teacher's pay and therefore to the tax payer. I think that it is fair to say that the doubt that further training made any difference in teaching quality went further than that, however. One of the oft-repeated observations by teachers themselves has usually indicated that 'theory' (i.e. college or university study) has no real relationship with nor bearing on 'practice' (i.e. what teachers do in schools).

One of the many responses to this charge has been to base college study, and the assessment of that study, on classroom action.

What follows is a small pilot study on the consequences of one such classroom action - based response in the curriculum studies strand of the Bachelor of Education degree at Capricarnia Institute of Advanced Education. This pilot study does not support the Board's own study which suggested little direct improvement in schools as a result of teachers' study in the Bachelor of Education degree.

THE RESEARCH

The prime purpose of this study is to explore what teachers have done when given the opportunity to negotiate a school-based assignment to satisfy assessment requirements in compulsory curriculum studies in the Bachelor of Education degree. The issues which it will investigate are reflected in The Bachelor of Education Degree in the Queensland Advanced Education System: An Evaluation (Board of Teacher Education,

1986). They include matters such as:

- the extent to which studies can be relevant, related to practice;
- the scope for graduate effectiveness as a change agent;
- congruence between school and college values;
- the attitudes of colleagues, including the school principal;
- the ability to apply studies of theory to professional practice;
- the effect of study on teachers' contributions to school priorities.

The assertions by some teachers and administrators that theoretical understanding did not translate into practical change (Board of Teacher Education, 1986, pp. 38-39), and the implicit assumption that it should, are investigated, as is the conventional wisdom* that in-service students welcome the chance to negotiate a study which has immediate practical application.

The pilot study will be restricted to the Bachelor of Education degree at Capricornia Institute, and those teachers who completed the compulsory core subject (one-eighth of the requirement for the degree) Curriculum Inquiry in Semester 1, 1986. The study will discuss the options for assignment work available to students and the proportion of total assessment met by such assignments, the choices made and topics chosen, the characteristics of the projects or assignments, their and their colleagues' perceptions of the assignments, and any recommendations for enhancement of the work. It will conclude with a brief comparison between such action options at Capricornia and Brisbane College of Advanced Education and Darling Downs Institute of Advanced Education, and an indication of the preparedness of those responsible for the curriculum studies there to participate in a larger study, following this pilot study.

The key research questions are:

- Do teachers take the opportunity to undertake school-based work for assessment in which theory is to be translated into practice or the theory inherent in good practice is to be explored, when it is available?
- How do they do it, and about what?
- What do they and their colleagues see as the value of such work, and how would they change it?

Design of this Study

It was intended that there be a triangulation of data sources in addressing the main research questions. The three sources were:

1. Analysis of teachers' submitted work.
2. Questionnaires to teachers.
3. Questionnaires to their colleagues.

In addition there will be a brief analysis of comparable studies at Darling Downs Institute of Advanced Education and Brisbane College of Advanced Education and discussions with lecturers in charge.

The background to the research questions, the analysis of options available to teachers studying curriculum in their B.Ed., will be derived from current subject outlines and

* In fact, rather more than conventional wisdom. See, for instance Knowles (1984), Schon (1987).

interviews with the lecturer(s) who teach the subject(s). If a more substantial study proves possible, interviews with teachers and their colleagues will be undertaken.

ASSESSMENT OPTIONS

Curriculum Inquiry at Capricornia Institute incorporates three major components. They are studies of ethnographic and action research methodologies, curriculum concepts, and curriculum operations. The assessment requirement is as follows:

1. Submit an assignment proposal - Week 3.

   This proposal takes the place of the consultation required when all students were on campus. It is not graded, but it must be developed to a satisfactory standard.

2. A one-hour test - Week 6. 20%

3. Submit an essay of approximately 4,000 words on one of the following; each is in two parts.

   It is expected that curriculum conceptions, assumptions and operations will be identified and discussed in each case.

   A. A CASE STUDY in curriculum development.

   Part 1: A brief outline of the case to be discussed in descriptive terms and a review of relevant literature, concentrating on relevant theory and any comparative cases. 40%

   Part 2: A detailed description and analysis, concluding with your assessment of lessons learned and possible applications in your own school. 40%

   TOTAL 80%

OR

   B. AN ACTION RESEARCH PROJECT

   Part 1: An assessment of what is happening now in the field of action and a general plan for your intervention. Relevant theory should be identified. 40%

   Part 2: A description of action steps, presentation and analysis of data from the monitoring of those steps, and evaluation. You may conclude with a new general plan if appropriate or a next action step. 40%

   TOTAL 80%

OR

   C. A project involving an analysis of your own curriculum philosophy. The project report is to be presented in two parts:

   Part 1: An analysis of your own curriculum philosophy, in terms of the curriculum conceptions and models discussed in lectures. The philosophy described should be defended by appropriate arguments and literature references. 40%

   Part 2: A description of the classroom practices or a set of specific

objectives which should result from the above curriculum philosophy. This is to be compared with the actual classroom practices used by you.

40%

TOTAL 80%

TEXTS:

McNeil, J.C. (1985). Curriculum: A Comprehensive Introduction. Little, Brown and Co.

McToggart, R. et al. (1982). The Action Research Planner. Waurn Ponds, Vic.: Deakin University.

Teachers may choose to initiate curriculum action either as an action research project, or as a case study in curriculum innovation. They may also choose to report on innovation which is already underway or has been completed, in their own school or some other (so long as access to adequate data is feasible). This latter option opens the way for those who are not currently teaching or who wish to undertake a library research assignment, rather than one in school. The final option, development of a personal curriculum philosophy, requires scope for classroom application.

In the belief that more structure would be necessary for external students, they were provided with a questionnaire, the completion of which provides an assignment proposal. Internal students were also given copies. Only two of a total of thirty-one external students and no internal students chose to use the questionnaire, although others may have used it as a guide in preparing the proposal. Telephone consultation was initiated by many teachers, as were individual and workshop discussions on campus by those attending the evening classes there.

OPTIONS CHOSEN

In Semester 1, 1986, the choices were as follows (Table 1):

Table 1: Teachers' choices of assignment

	Action Research	Case Study			Personal Curriculum Philosophy
		Their own	Other in school	Library	
Internal students					
n=15	6	4	4	-	1
%	40	27	27	-	6
External students					
n=19	8	6	5	-	-
%	43	31	26	-	-
Withdrawals*					
n=13	5	6	-	-	2
%	38	46	-	-	15
All teachers who completed assignment: %	43	28	26	-	3

* Withdrawals are those who completed an assignment proposal, but not the complete assignment. Reasons for withdrawal included those usual in such a course: ill health, transfer, promotion, and other changed circumstances.

It is interesting to note that not only did all teachers choose an option involving innovation in school (71 per cent of cases studying and reporting their own action), but even those teachers who were not currently employed, or were in non-teaching positions, negotiated access to a class in order to undertake such an assignment. There appears to be no significant difference between internal and external students, or between those who completed the subject and those who withdrew.

Table 2: Curriculum innovations chosen by field of study

Language: including holistic planning, experience-based programs, Early Literacy Inservice Course, process writing, spelling, and reading schemes	12
Special Education: mainstreaming and intervention	3
Mathematics: Basic Learning in Primary Schools, School-Based Curriculum Development	2
Social Studies: Australian current events facts, note-taking skills	2
Computers: word processing	2
Preschool to Primary transition	1
Motor skills and spatial awareness	1
Handwriting	1
Art and craft	1
Problem solving	1
Science	1
Technical Drawing: use of a three dimensional model	1
Careers Education: Review of School-Based Assessment	1
Pastoral Care: School-Based Curriculum Development	1
Home Economics: Review of School-Based Assessment	1
Woodcraft Workshop	1
Sports coaching: Associate Diploma	1
Personal Curriculum Philosophy	1
(Completed assignments only;	n=34)

The dominance of language innovation (12 assignments) in the preschool and primary school (total: 28 assignments) is the striking feature in Table 2. Both of the computer innovation studies were concerned with word processing, and the teachers specifically related that to enhancement of the writing program as well as their other objectives in computer keyboard skill development, computer literacy, and parent involvement.

CHARACTERISTICS OF THE STUDIES

In this pilot study an attempt was made to identify a small number of characteristics of assignments which were most important to the objectives of such study and which could be scored by an examiner without intruding unacceptably on the assignment assessing task. Four such characteristics were identified, two pertinent to the concepts and processes of curriculum development as such, the other two regarded as critical to the successful application of a rational model of curriculum change (inno-

vation) in the action research or case study chosen by the teacher. The characteristics chosen were:

1. The identification and appropriate use of curriculum models, specifically diagrammatic or schematic representations of curriculum decision-making, implementation, or evaluation.

2. The identification and appropriate use of curriculum theory about curriculum design, implementation, or evaluation.

3. Identification of the learning, social, or epistemological theory upon which the teacher's curriculum innovation is based.

4. Appropriate use of that theory in planning, implementation or evaluation of the innovation, or description and analysis of others' planning, implementation, or evaluation.

The results were as follows (Table 3):

Table 3: Teachers' assignments: identification and use of curriculum and other* theory

	Identification and use of curriculum model(s)#	Identification and use of curriculum theory+	Identification of other theory*	Use of other theory
Internal				
n=15	13	9	15	10
%	87	60	100	67
External				
n=19	13	18	15	14
%	68	95	79	74
All teachers %	76	79	88	71

* 'Other' refers to learning, social or epistemological theory.

\# 'Models' refers specifically to diagrammatic or schematic representations of curriculum decision-making, implementation and evaluation.

\+ 'Curriculum theory' refers to theory about curriculum design, implementation or evaluation.

Typically, the teachers studying the subject identified and applied theory appropriately, if not in all aspects of their study. For instance, some (typically external) might not use diagrammatic modelling, but they would explain. Many did both.

The picture which emerges from the analysis was a highly satisfactory one to the lecturer, but features of this analysis which call for further inquiry, via interview and questionnaire, are as follows:

1. Teachers studying in weekly classes on campus showed a stronger tendency to use diagrammatic or schematic representations of curriculum models. A rational analytical model developed by the author was presented in the Study Guide for external students, but used much more frequently in workshop sessions on campus. It was not the only model used by teachers, but the classroom use on campus may have increased the probability of use of it or equivalent models. In unsolicited comment, several teachers referred to the helpfulness of such models in conceptualising curriculum work in school.

2. Teachers studying external showed a stronger tendency to identify and use other curriculum theory. No explanation has emerged from any source analysed so far. Written advice from the lecturer in response to assignment proposals stressed the same things to both internal and external students. Most internal students acquired the Study Guide and so had access to, if not equivalent dependence on, the same documentation as the external students. Design, implementation and evaluation models and theory were all presented and used in workshop activity in a protracted simulation exercise by teachers on campus.

3. Internal students showed a stronger ability to identify the relevant learning, social, or epistemological theory than did external students.

QUESTIONNAIRE RESULTS

In this pilot study, questionnaires were sent to all teachers who completed Curriculum Inquiry, and via these teachers to a senior colleague of their choice. The latter were invited to mail back their response separately from the teacher, and anonymity was suggested for both groups. A 50 per cent response rate offered a small, but useful, sample of seventeen teachers and eight senior colleagues. The major features of the results are discussed below.

All teachers were involved in action, although for most (60 per cent) that action was already under way. However almost all (88 per cent) believed that the approach to design, implementation, or evaluation for the teacher or school changed as a result of the assignment. The same proportion of senior colleagues believed the same to be true. It is interesting to note that those teachers not currently teaching found this to be no barrier to involvement.

Teachers and administrators in the schools concerned usually knew about the project and that it was being written up (88 per cent), approved of that (82 per cent - 6 per cent of teachers and 12 per cent of administrators did not), and about half believed that the work was useful to them too. All administrators believed that the project was helpful, although only half thought that it was helpful to them.

Senior colleagues were often (65 per cent) involved in policy clarification, or in assistance with planning, locating resources, implementation, or evaluation, and were usually (70 per cent) seen by teachers doing an assignment in school for the Bachelor of Education to be helpful and supportive.

There was a concern about fellow teachers' sensitivities to reported inquiry, and to the ethics of reporting pupils, teachers, or other community members. However, almost all teachers and their senior colleagues believed that such problems can be satisfactorily resolved.

One must conclude that teachers without exception took advantage of the opportunity to work where they could apply theoretical understanding to practical change, and that they and their colleagues believe that there was an effect of this on the schools involved. There is definitely a substantial place for action-based curriculum work in in-service education, and action research provides a significant part of that work. Of particular long-term significance is the reported change to schools' curriculum development practices.

THE BOARD OF TEACHER EDUCATION STUDY

Some points of comparison with the state-wide Bachelor of Education evaluation by the Board of Teacher Education merit comment.

In the Board's study we find that the major recognised strengths of the Bachelor of

Education are developed awareness and understanding of issues, personal development, and professional development which appears to be more at the level of understanding than implementation (Board of Teacher Education, 1986, p. 63). Only 25 per cent of school administrators see the Bachelor of Education as 'very relevant' (p. 39) although a further 55 per cent see it as 'somewhat relevant'. In the Capricornia study 100 per cent of senior colleagues saw the study as useful, although only 50 per cent saw it as useful to them. Eighty-two per cent to 88 per cent of teachers doing the studies saw changes to their school's curriculum practice. Only some principals in the Board's study see Bachelor of Education enrolled or graduate teachers as a source of ideas (p. 65) and, although schools are supportive of study they are not, generally, receptive to new ideas (p. 67).

There is ample support in the literature, it is reported (pp. 63ff), for opportunities to implement or apply theoretical understandings. In adult education research there is also support for the opportunity to negotiate the topic, as well as to apply it. It would appear that the nature of the negotiated, action-based studies in Curriculum Inquiry meets general teacher expectation, and this is reflected in the results reported. Clearly such studies meet the need expressed by the teacher who commented (p. 65):

> 'Developing curriculum was the thing I enjoyed most. I'm more aware of things that need to go into curriculum and evaluation.'

The findings in the Capricornia study do not corroborate the 'Least effect' priority shown in Table 5.1 of the Board's study which shows very little perceived scope for teachers to initiate new programs in the school or to contribute to school decision-making. There is an implication (in items relating to awareness, cooperative planning, and communication) that the action-based assignments may contribute to enhanced relationships with other teachers, one of the two lowest priorities on the list in the Board's study.

This study reveals confidence that most of a teacher's colleagues do know about the assignment work which is underway when it is action-based, and are receptive to new ideas, whereas the state-wide Bachelor of Education evaluation's findings (Board of Teacher Education, 1986, p. 113) are more limited (see Table 4).

Table 4: Belief that colleagues knew of teachers' involvement in the Bachelor of Education

Board of Teacher Education, 1986	33 per cent school administrators 53 per cent enrolled students (teachers) in B.Ed. 66 per cent graduates of B.Ed.
Whelan, 1986	88 per cent enrolled students (teachers) in B.Ed.

No teachers, or their colleagues, expressed a concern that classroom-based assignments interfered with the work program of the school. In the state-wide study (Board of Teacher Education, 1986, p. 108), 68 per cent of graduates found that such work interfered little or none of the time. There seems to be very little basis for objection to it on these grounds.

STUDIES AT BRISBANE COLLEGE OF ADVANCED EDUCATION AND DARLING DOWNS INSTITUTE OF ADVANCED EDUCATION

At Brisbane College of Advanced Education the subject 'Teachers and the Classroom' focuses on the teacher as curriculum analyst, designer, and change agent. It is a single-semester subject (one-eighth of the degree) but is not the first taken. 'Contemporary Issues in Education' is a prerequisite.

In the college amalgamation, Mount Gravatt gave up the examination previously required in its equivalent subject to 'Teachers in the Classroom' and all assessment now is based on a proposal for, and detailed development of, design of a program and evaluation. Actual implementation of the design is not required. What is produced is a curriculum policy document for a piece of curriculum action.

At Darling Downs Institute of Advanced Education the subject 'Curriculum Inquiry' responds to the role of teacher as curriculum decision-maker. It is a two-semester subject (one-quarter of the degree) and again is not the first subject taken, being a second-year study for part-time students. The subject is structured on the Stufflebeam CIPP model of evaluation and requires the teacher to undertake what is described as '... an action research-type curriculum exercise. The identification of a curriculum problem (Context Evaluation) focus (sic) the background of the design and development of a program (Input Evaluation) which is implemented and evaluated in the classroom (Process and Product Evaluation'. All teachers will do something, not simply write about it, I was told. Again, there is no formal examination.

There is often an initial difficulty as teachers interpret 'problem' as rather more restricted than the intended 'area of curiosity', 'irritant', or 'opportunity to innovate'. However, all three colleges share a recognised need to consult and assist teachers in developing a proposal which is sufficiently disciplined to promote manageable action or exploration, helping them through initial uncertainties. That we focus on 'problem', 'action', and 'innovation' respectively seems not to be significant to the outcomes.

None of the colleges seems likely to be publishing teachers' work in 1988. Bath Capricornia Institute of Advanced Education and Darling Downs Institute of Advanced Education have done so, but cost and editorial time requirements of staff make it highly unlikely in 1988. Collaborative actions as an outcome of a larger (or even this pilot) study might ameliorate both difficulties. At Brisbane College of Advanced Education there may also be a policy impediment however.

All three colleges require, and take specific action to encourage and develop, theorising about action. An initial tendency to descriptive personal narrative is a common feature in all three student groups, and common college strategies address the issue.

The three colleges take different stances on the teaching of appropriate inquiry, planning and evaluating methodologies. But then, the studies also occur within quite different time, sequence, and prerequisite constraints in the degree. Discussion of these differences, contrasting structures within the subjects, and the variety of references preferred may be pursued in detail in a later study.

CONCLUSION

The action-based studies may be more attractive to teachers than other studies, be seen by them and their senior colleagues to be relevant applications of theoretical understanding to changed practice, and to enhance professional communication and curriculum practice in the school.

In curriculum studies which require or permit action-based assignments, studies can be relevant, and related to practice, almost entirely. Further, it is suggested that teachers will choose such options.

There is a clear suggestion that teachers are effective as change agents, changing individual classrooms and whole school curriculum processes. The pilot study did not explore congruence between school and college values, but unsolicited comment implied that college-related pressure to innovate was often welcomed.

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