

Copyright is owned by the Author of the thesis. Permission is given for a copy to be downloaded by an individual for the purpose of research and private study only. The thesis may not be reproduced elsewhere without the permission of the Author.

AURAL FEEDBACK IN MICROTEACHING

An investigation into the effects of  
audio feedback on a Practical Training  
component of Teacher Education.

A Thesis submitted as part fulfilment  
of the requirement for the degree of

MASTER OF ARTS

in Education  
at Massey University

Christopher W Kinder  
December 1989

## ABSTRACT

The investigation presented here explores the use of audio feedback in the review stage of a Microteaching exercise.

The investigation involving Year Two Music Teacher Trainees, compared self-evaluation ratings made in response to three feedback conditions; memory, audio, and video; and attempted to explain any difference in ratings by changes in the source of feedback. The three self-ratings were compared to an expert rating of each microlesson to investigate any other effects feedback had on rating. The design of the study also allowed for a comparison to be made between two different teaching conditions, one teaching pupils in a classroom setting, and the other teaching peers in a College setting.

Although questionnaire responses indicated a preference for video feedback, there was actually little change between audio and video ratings. Neither of these ratings were as accurate as the initial memory rating when all three were compared to the expert rating. The video feedback appeared to generate a positive image which resulted in trainees over-rating themselves. Most importantly, there was no significant difference between audio and video ratings.

With regard to differences between teaching condition, the peer-teaching setting appeared to encourage an unrealistic view, with trainees in this group over-rating themselves more than those teaching pupils at school. Questionnaire responses indicated that the group teaching in the school setting tended to regard the Microlesson, although limiting, to be a valuable experience. This group's initial rating was lower than the peer-teaching group, but they were more responsive to changes in feedback.

Despite severe limitations to the generality of the study due to design shortcomings, the findings provide enough material for a general discussion on the differences in mode of feedback. Several issues are raised, including the idea that an audio stimulus generates a higher level response than a visual stimulus. The discussion includes reference to an informal study which was undertaken to explore this notion. (That it is not directly supported by the findings is probably due to design issues which failed to account for the superior status of video in the eyes of inexperienced self-raters, and by the use of a rating scale which was not sensitive to issues of aural and visual perception.)

The discussion takes place within the context of Teacher Education, preparing for a profession which is continually making demands on a teacher's adaptability to change and her ability to reflect on issues regarding the pace and direction of those changes. The feedback stage of a Microteaching cycle is seen as a place where such reflective activity can be encouraged, especially by the use of a variety of modes of feedback, including the activity of listening without visual cues, or in other words, audio feedback.

## ACKNOWLEDGEMENTS

The presentation of this thesis has been possible only through the assistance of a number of people and institutions. I would like to thank Graham Parsons, Head of the Music Department at Palmerston North Teachers' College for his support and encouragement, and for his assistance with the implementation of the actual study at the College. Fleur Stark, who acted as co-rater, Keith Paintin of the Computer Studies Department, colleagues in the Music Department, and members of the Library staff are also acknowledged for contributions at different stages of the study. I am grateful also to Barry Slade, principal of St James' School, Palmerston North, for his co-operation in allowing pupils at the school to be involved in the Microteaching exercise.

The inclusion of a followup study was made possible by Ciaran Sugrue of St Patrick's College, Dublin, whose generosity with materials, facilities and advice is warmly appreciated. I am grateful also for study facilities at St Patrick's College, Maynooth, provided by staff of the Computer Studies Department, and by John Weafer, Director of the Centre for Research and Development.

Eric Archer, Graduate Advisor for the Education Department at Massey University is responsible for encouraging me to complete my M.A. with this thesis. For this, and for continuing support and advice, I am very grateful. Thanks also go to Ross St George of Massey University for his encouragement and guidance.

A special word of thanks goes to my wife Regina Murphy, who assisted in the preparation of the MS, and whose constant companionship and support encouraged me through all stages of this thesis.

## CONTENTS

Abstract	i
Acknowledgements	iii
Contents	iv
List of tables	vi
Terminology	vii
CHAPTER ONE - <u>INTRODUCTION</u>	1
CHAPTER TWO - <u>LITERATURE REVIEW</u>	
2.1. HISTORY AND BACKGROUND	5
2.2. RESEARCH FINDINGS	11
2.3. MICROTEACHING IN SPECIFIC SUBJECT AREAS	26
2.4. MICROTEACHING IN MUSIC EDUCATION	29
2.5. SUMMARY	36
CHAPTER THREE - <u>THE PROBLEM DEFINED</u>	
3.1 INFLUENCES OF THE LITERATURE	37
3.2 RESEARCH PROPOSALS	38
3.3 RESEARCH DESIGN	39
CHAPTER FOUR - <u>METHOD</u>	
4.1. SUBJECTS	40
4.2. PROCEDURE	40
4.3. EVALUATION INSTRUMENT	44
4.4. DATA RECORDING	45
CHAPTER FIVE - <u>RESULTS</u>	
5.1. CHANGE IN TRAINEE RATING	47
5.2. COMPARISON OF TRAINEE AND EXPERT	57
5.3. CHANGE BY ITEM	64
5.4. QUESTIONNAIRE RESPONSES	69
5.5. DISCUSSION	75
CHAPTER SIX - <u>GENERAL DISCUSSION</u>	
6.1 INTRODUCTION	81
6.2 THE FOLLOW-UP STUDY	83
6.3 MICROTEACHING AND AURAL FEEDBACK	87
6.4 THE FUTURE OF MICROTEACHING	89

APPENDICES	A - Example of a Microlesson	93
	B - 14 Stanford Teaching Skills	94
	C - Explanation of Minicourse format	95
	D - Lesson Plan	97
	E - Evaluation Form and Explanation	99
	F - Questionnaire	102
	G - Direction and Magnitude of Change	103
	H - Results of Wilcoxon Test	104
	I - Rank Order of Ratings	105
	J - Inter-Rater Reliability	106
	K - Rank Order Correlation of items between feedback mode	107
	L - Teaching and Questioning Skills (Follow-up)	108
	M - Evaluation Form (Follow-up)	109
	N - Background to Follow-Up Study	110

REFERENCES/BIBLIOGRAPHY	113
-------------------------	-----

## LIST OF TABLES

4.1	- Filming Schedule	42
5.1	- College and School Group Summed Ratings	48
5.2	- Graph of Summed Ratings	49
5.3	- Number of Trainees who Changed Ratings	53
5.4	- Direction of changes	53
5.5	- Correlation Coefficients	56
5.6	- Expert Summed Ratings	58
5.7	- Number of trainees whose rating agreed with the expert	60
5.8	- Number of trainees who rated themselves higher than expert	63
5.9	- Number of rating changes by item	65
5.10	- Mean change by item group	67

## TERMINOLOGY

Students enrolled in pre-service training for Primary School teaching are referred to as trainees, (in the present study, trainees in their second year)

The School group refers to trainees who taught lessons to pupils (children of age 9 or 10).

The College group refers to trainees who taught lessons to peers (trainees of the same year group).

Feedback refers to any information received by the trainee about past teaching experience. In this study, feedback conditions include immediate recall (no assisted feedback), audio (unguided listening to a soundtrack of a lesson), and video (unguided viewing of a film, with soundtrack, of a lesson). Feedback condition, feedback mode, and type of feedback are interchangeable terms.

Teaching condition refers to the environment (or setting) where the microlesson took place, and therefore the type of pupil involved in the microlesson, either at School or at College. Supervisor refers to the person implementing the music course, and carrying out the present study. Expert rating is the evaluation grade given by the supervisor for each microlesson.

The terms Microlesson and Microteaching exercise refer to the same activity and are used interchangeably. The abbreviation MT is used in places to stand for "Microteaching". The terms Rating scale and Evaluation form are also used interchangeably.

## CHAPTER 1. INTRODUCTION

An Education System, like most examples of social organisation, responds to change. For survival, the integral parts of any organised group of human activity are required to continually adapt. Education, with a direct responsibility to children and their parents, is perhaps more vulnerable than other disciplines to pressure from external forces, be they market demands, community requirements, or technological developments.

Teacher Education is a specialised facet of the discipline of Educations. It is a youthful facet, with attention to precisely how best one person can encourage learning by another person being the thrust for only the last century. It has become accepted now that the possession of Knowledge itself is simply not sufficient to make a teacher, certainly not always a 'good' teacher. Teachers' Colleges and University Education Departments specialise in research and educating students of teaching in ways of imparting that Knowledge, of creating suitable learning environments, of enquiry and discovery in the classroom, and in later life.

As a young discipline, Teacher Education is particularly responsive to pressure and change. Schon (1988), in talking about preparing professionals for the demands of practice, suggests that pressure from the community often focuses on

"such issues as the quality of teaching and the in-service education of teachers. Teachers, who often resent becoming targets of blame for the perceived failures of public education, tend nevertheless to advocate their own versions of the need for professional development and renewal. Critics inside and outside the schools have argued in recent years that we must foster and reward development of the craft of teaching" (Schon, 1988, p15).

It is in such an eager atmosphere of responsibility and professional development that the growth of Teacher Education flourishes. Issues such as, for example, the open-plan classroom, the teacher as "reflective

professional", microteaching, discovery learning exemplify the variety of concerns which challenge teachers and Teacher Educators.

When "Microteaching" was first introduced at a University Education Department, it emerged as a response to a challenge, in this case from within the profession - student teachers were disillusioned with the relevance of their methods course. (Allen and Ryan, 1969). And as Microteaching developed in various countries and in varied teaching conditions, it both responded to, and in turn, challenged, the principles and practices of the teaching profession.

"Teacher trainers who had become dissatisfied with previous approaches to the practical training of teachers regarded microteaching as a breath of fresh air in the clouded area of effective teaching. With the introduction of microteaching with its associated emphasis on teaching behaviour, educationalists began to examine other wider perspectives in education. As a result, there developed movements advocating the total reform and restructuring of teacher education itself" (Hargie and Maidment, 1979, p111).

The initial development and subsequent growth of Microteaching provides an example of what Schon was referring to as the "development of the craft of teaching" (Schon 1988). In its 25 year development, Microteaching has been analysed and adjusted by many sources and for many reasons, being accepted by some and discarded by others. Allen and Ryan anticipated this in the early days at Stanford, a primary locus of MT development, when they warned that;

"Microteaching currently has the same promise, and the same danger, that newly devised research and training techniques have always had; the promise of opening up entirely new avenues, perspectives and alternatives to human exploration; the danger of locking in too early on a first alternative which arose purely out of chance and convenience" (Allen and Ryan, 1969, preface iii).

For some, the behaviour modification model of Microteaching proved to be either unworkable or unwanted in the Teacher Education process. They "locked in too early". For others, the flexibility of Microteaching was seen as an advantage, and adaptations were made to suit various needs and requirements. This has resulted in a refinement of the Microteaching

principle into various conceptual models (see Chapter 2), an indication of Microteaching both responding to, and being responsible for, changes in educational thinking.

One such conceptual model has focused on the need for teachers to be sensitive to the changing needs of pupils, and to be flexible in their own teaching strategies. Such a "reflective" model of Microteaching echoes the ideas of Schon, who when writing about "Educating the Reflective Practitioner", talks of the professional engaged in a "kind of improvisation, inventing and testing in the situation strategies of her own devising" (Schon, 1988, p5). The way that Microteaching can encourage such a perspective forms the basis of the discussion in Chapter 6 of this paper.

The initial developers suggested early in its development that:

"Microteaching as a teacher training technique must proceed via a careful investigation of the contribution of each of its components". (Allen and Ryan, 1969, p15)

It is therefore the aim of this study to discuss how a manipulation of the components of the Microteaching process can best encourage the growth of reflection. In particular, the feedback component of the process is under review, with both the main study and the follow-up study contrasting the use of audio feedback with video feedback. (Chapters 4,5 and 6).

The development of video recording and playback has undoubtedly had a strong influence on the growth and acceptance of Microteaching, which is itself evidence of the level of response which the Teaching profession makes to technological developments outside the school. That video has dominated and influenced the growth of Microteaching is a reality ignored by many writers. Of central importance in this paper is the thesis that audio tape can also be effective in providing feedback, for general classroom situations and especially for music teaching. In fact, the suggestion is made that the absence of visual cues or images allows for and indeed encourages a degree of concentration and attention at a deeper

level, listening resulting in a more thoughtful response, and providing a greater opportunity for the growth of reflective thinking.

Chapter 2 describes the evolution of Microteaching, and reviews some of the literature contributed since 1968, the year that the MT programme at Stanford was first introduced. It also briefly outlines the development of Music Education and the training of music teachers. Finally, it combines these two topics and discusses the place of Microteaching in the training of Music Teachers.

Chapter 3 discusses the influences the literature has had on the present thesis and outlines the hypotheses which shape the design of the research.

Chapter 4 explains the procedure adopted for the main investigative study, backgrounding the subjects and recording instruments used. As well as contrasting modes of feedback, the study was able to contrast two teaching conditions (teaching pupils and teaching peers), a comparison made possible by design factors, but one secondary to the main thesis.

Chapter 5 reports the results of the study, and analyses data collected from the evaluation forms and questionnaires completed by the subjects. The results are integrated in a general discussion of the findings, with reference to the earlier literature review.

Chapter 6 continues the discussion, and reports the findings of an informal follow-up study, undertaken to explore a notion of reflective Microteaching which emerged from the main study. The chapter then synthesises findings from both studies and with reference to material from a related discipline, the psychology of hearing, draws some conclusions. The focus of the discussion is returned back through issues of listening, of feedback, and then of Microteaching, to the more general implications for Teacher Education.

## CHAPTER 2. LITERATURE REVIEW

### 2.1.1 HISTORY AND BACKGROUND

The first body of research on Microteaching emerged from Stanford University in 1963. The Education Department there defined Microteaching in terms of practising teaching in a safe environment where the class, the task and the time were all reduced, and where the participants reviewed their attempts before repeating the lesson. McGarvey and Swallow (1986) in a recent review, provide a concise summarised definition of the Microteaching process.

"The complex skills of teaching were broken down into simple, component skills and rating schedules were developed to define and monitor the attributes of each skill. The students attended lectures and skill demonstrations (often videotaped 'models' showing examples of good practice) on these component skills of teaching. The students then practised these skills by preparing and teaching short lessons (5-10 minutes) to small classes (6-8 pupils or peers). They received feedback about their performance by viewing and discussing the videorecording of their microlessons, using rating schedules to guide their analysis of the skills being practised. Practising a specific teaching skill in a short lesson with swift feedback provided a very much shortened learning cycle as compared to conventional teaching practice in classrooms. This meant that students could receive more support and have more information about their performance. They would also have the opportunities for repeat practice and for developing their powers of perception and analysis. Thus microteaching was intended to help students improve their teaching skills and their self-confidence." (McGarvey and Swallow, 1986, p2)

By adding modern electro-mechanical feedback to a traditional training technique, the term "Microteaching" was coined, a title concordant with other "micro" developments in the electronic and communications fields at the time. Microteaching has since 1963 been associated with the Stanford model, all variations on the main theme being in some way related to the original blueprint. (See Appendix A for an example of a Microteaching experience provided by the Stanford team).

Microteaching grew out of a perceived need to strengthen the "accountable" base of teacher education. As one of the team who first developed the training, stated;

"Microteaching evolved slowly in answer to a problem that is common in teacher education...(trainees) were reluctant to undertake serious study of the teacher-learning process" (Allen & Ryan, 1969).

Increased accessibility to portable audio-tape recorders and the development of reliable and cheap video recorders encouraged the Stanford team to utilise the new technology to provide immediate feedback to practitioners, something which previously had only been possible through observer recording.

Not only did the Stanford team provide teacher educators with a training model with a sequence of demonstration - planning - teach - evaluation - reteach, they also provided a list of 14 individual teaching skills (See Appendix B). Allen & Ryan (1969) outline the main advantages of this type of teacher training;

"First, although the teaching situation is a contrived one, it is nevertheless real teaching.

Second, by scaling down the size of the class, the amount of time, the scope of the lesson etc., the complexities of the classroom are drastically reduced.

Third, this allows the trainee teacher to focus upon the acquisition of certain teaching skills or the accomplishment of certain tasks.

Fourth, such focusing is made possible because of the high degree of control that can be brought into the microteaching situation.

Fifth, microteaching has the enormous advantage of being able to offer immediate feedback following performance. The student has several sources of feedback at his disposal with the help of which he can maximise his insight into his teaching behaviour." (in Cohen & Manion 1977)

The evolution of the Microteaching concept was influenced further by the work at the Far West Laboratory for Educational Research and Development (Borg, Kelley, Langer, & Gall, 1970), where the researchers developed "Minicourses", self-instructional courses encompassing a wide range of simple and complex skills (see Appendix C). The adaptation of these Minicourses for the British setting (Perrott 1977, Brown 1975) developed the concept further, and with this development came associated research into the overall effectiveness of manipulating different components of the Microteaching sequence.

Periberg (1987) points out;

"It is important to note that during the initial stages of its inception and development, Microteaching, like many other educational innovations, was not based on solid theoretical conceptualization and research evidence".

He explains that because of this, teacher educators modified and adapted the MT concept to suit their particular needs and resources. In New Zealand, for example, the term "Microteaching" is used to describe many activities including single isolated lessons with no feedback, lessons involving two or more trainees teaching a group of children, demonstrations and discussions, and the practice of introducing trainees to various teaching models (Battersby 1987). Very few instances amongst those referred to in Battersby's survey seemed to include feedback from the recording and re-teaching phases of the cycle. In Ireland, the country involved in the informal follow-up study reported in Chapter 6, Microteaching resembles more closely the original Stanford model, as adapted by Perrott (1977) and Brown (1975).

## 2.1.2 MODELS OF MICROTEACHING

Microteaching has been widely applied since 1963. Research in more recent years has been of a review nature, with emphasis on the need for a conceptual base for Microteaching (McGarvey 1986, Dunkin 1987, Wragg 1982). It has been suggested (McLeod 1987) that some sort of conceptualisation is evident by organising research activities under one of four distinct but sometimes overlapping models. The four approaches are:

- 1 The original Stanford approach, where modelling and reinforcement were used to improve the general teaching effectiveness (Allen & Ryan 1969).

- 2 A behaviour-modification focus (McDonald 1973) where success would be measured by a specific behaviour change, achieved through contingency reinforcement schedules.

- 3 A social skills approach, where teaching is to be regarded as a process of decision-making and selection of relevant skills, rather than a collection of individual skills taught in isolation. Katterns (1977) refers to this as a Sensitisation Model.

- 4 The fourth approach is referred to as a "reflective" or "cognitive" model. Because this model is referred to specifically later in this paper, it is discussed in some detail below, including reference to differences between "reflective" and "routine" action.

McIntyre, MacLeod & Griffiths (1977) adopt a cognitive model, suggesting that MT could be assessed in terms of whether it provides "for the development and induction of functional and adaptive cognitive structures" (p262).

Joyce (1988) refers to the acquisition of "meta-cognitions" - "concepts that help the learner to control the learning process, accelerate it, and navigate the more difficult learning tasks with greater confidence and less

anxiety" (p32). That there has been attention given to this in the literature, according to Joyce, is because Teaching Practice has traditionally had negative funnelling effects on trainee teachers' development, rather than a "branching" of teaching styles which could be possible from classroom experience. The development of such "meta-cognitions" can, Joyce claims, be encouraged through Microteaching, and a variation on the Microteaching concept which he calls "Instructional Systems", resulting in teachers becoming more flexible in their choice of teaching strategies. (pp33/34)

Adaptability and flexibility in choice of teaching strategies has an obvious relationship to what some writers describe as "reflective" teaching. The reflective model is seen elsewhere in the literature as an alternative to the skills approach (Schon 1983), the "reflective practitioner" being regarded more as a true professional than is the "rational technician" (p288).

Dewey (1933) made an important distinction between reflective action and routine action. Routine action is "that action which is guided by tradition, authority, and the official definitions within a social setting". Reflective action on the other hand entails "active, persistent and careful consideration of any belief or supposed form of knowledge in light of the grounds that support it, and the further consequences to which it leads" (Dewey 1933). Such reflective action should, Dewey says, always take place within an attitude of responsibility, or the consideration of the consequences which certain actions may have. (Zeichner 1982)

Van Manens (1977) superimposes a three-tier distinction onto Dewey's attitude of responsibility, suggesting that first a teacher trainee can be reflective about the technical skills of teaching, secondly about the worthwhileness of educational goals and principles, and finally about the social, political and moral implications of one's teaching.

The cognitive or reflective model of Microteaching is clearly different from the other three models mentioned above. Whether it is Van Manens consideration of educational goals and principles, Joyce's "meta-cognitions", or MacLeod's "adaptive cognitive strategies", a cognitive model of Microteaching can, it is claimed, be responsible for encouraging teachers to reflect upon their own teaching, through critical self-evaluation of differences between their intention and their actual performance.

Not all the literature reported on the following pages can be easily organised into one of the theoretical models mentioned above. There seems to be general agreement that MT "works" and is enjoyed by the participants, but this subjective reaction does little to validate the research. As Allen explains,

"Microteaching has probably succeeded because both Teachers and supervisors like it. Teachers like it because it gives them an opportunity to practice in a safe setting.

Supervisors like it because it has an aura of professional mystique. It is rather a harsh reality that this affective evidence is more important than any research findings".  
(Allen 1980)

A review of such research is important though, in order to understand these short-comings and to discern the areas where further research is indicated. Research difficulties aside, much constructive and elucidating work has been done in many areas. Perhaps if one was to adopt Perlbarg's (1987) encompassing conceptualisation of MT as an "eclectic laboratory training technique" (p717), much of what is written below can be seen as contributing greatly to the discussion.

## 2.2 RESEARCH FINDINGS

### 2.2.1 MEASUREMENT DEVICES

The effectiveness of a MT cycle is usually measured by an observed change in the frequency of a particular skill or teachers behaviour. This may be a behaviour measured before and after treatment, or a change measured in the trainees ability to evaluate and replan. Some studies have tried to establish whether such a change is long-term and remains for subsequent use in the classroom, rather than just being demonstrated under laboratory conditions.

When recording changes in teachers' behaviours after a MT exercise, there are two types of measurement instruments which can be used. Copeland (1982) refers to these as "high-inference" or "low-inference" measures. The term "inference" is explained by its initiator Rosenshine (1971), as "the process intervening between the objective behaviour seen or heard and the coding of this behaviour on an observational instrument" (p19). In the context of a MT exercise, "high-inference" measures require the observer to infer the frequency of behaviours such as "enthusiasm", "involvement", or "clarity of presentation"; and "low-inference" measures require the observer to focus upon the frequency of specific overt behaviours, such as eye-contact, number of questions asked, etc.

Referring to the third of McLeod's conceptual models, a social skills or sensitisation model of MT will require the former measurement technique mentioned above. This type of required behaviour by definition will be observed using "high-inference" measures, and will therefore be more open to challenge. Such research is important though, in the development of this MT concept, and measurement devices need to be developed. Questionnaires on trainee reaction, and comparison of trainees own

evaluations of different records of the same lesson, or of a series of lessons, are two possible techniques for this area.

### 2.2.2 MICROTEACHING COMPONENTS

Research on Microteaching usually focuses on the effect on the cycle of a change in one or more of the following components; Modelling, Participants, Supervisors, and Feedback.

Modelling - every MT cycle will begin with the introduction of a specific skill or behaviour in question. This can be done through demonstration (sometimes called a "master lesson") which can be live or recorded, by discussion, or by some form of general observation. Interrelated to the modelling component, are issues regarding the role of a supervisor (should s/he provide the model?), and the type of skill being focused on (a nonverbal skill will need a visual model)

Participants - many research strategies have developed under this heading. The personality type of the trainee teacher, prior experience of the participants, at what stage of training the MT takes place?, how accustomed are the trainees to the MT cycle?, etc, are all issues concerned with the trainees. The nature of the participating students is also important - are they school pupils?, if so, does the MT take place on their territory?, are the participating students the trainees peers?, are they known to the trainee?, etc.

Supervisors - the amount of contact a supervisor has with a trainee, whether the supervisor is the same person as the demonstrator, what form the supervision takes regarding style of evaluation; these and other questions have formed the basis of some research designs.

Feedback - various types of feedback can be made available to trainees, ranging from immediate recall and observer ratings, to audiotape and

videotape. The effectiveness of one form of feedback over another has been investigated in some studies, and the form of the feedback as well as the source, has interested some researchers (see 2.2.6).

### 2.2.3 MODELLING

When a Microteaching cycle is being used by Teacher Educators to do more than simply provide non-threatening mini-experiences to boost confidence, then a "model" or demonstrated skill is probably involved. As Dunkin & Biddle (1974) state clearly, "Those who wish to teach about or study education find it convenient to set forth a model for their efforts" (p31). In their exposition of a general model for the study of classroom teaching, a kind of "macro-model", they support the concept of providing models at all levels. As teaching is a complex activity that reflects many factors, and as improvements in teaching methods are always desirable, then providing a model is often "the first-step in the development of a general theory about teaching methods".

The modelling stage of the MT cycle has received much attention from the researchers. As already mentioned, the behaviourist approach (MacDonald, 1973) suggests that the repeated MT cycle provides an ideal climate for successive approximations by a trainee towards the target behaviour modelled at the outset. Much of the disfavour which MT experienced in recent years could perhaps be explained by the predominance of this behaviouristic - mechanistic approach, which quite alien to the humanistic, holistic concepts prevalent in more recent years.

The fact remains though, that learning to teach does involve imitation and behavioural change. The literature seems to suggest that there is a significant difference between viewing a series of recorded, ideal demonstrations, and learning from general observation. The readily available storage and replay facility which video recording provided, may

quite possibly have discouraged some Teacher Educators from including general observation, "apprentice"-style, in favour of specific, demonstrated skills, modelled for imitation.

One study, although concentrating on one specific skill, addresses the question of the role of modelling, by comparing the use of positive and negative models (Gilmore 1977). Two groups of students were provided with 3 videotape models each, Group A viewing positive examples of the skill, while Group B viewed negative examples of the skill. Group C were also introduced to the skill, but did not view any model. After Microteaching, there was a "clearly visible tendency" (p157) for Group A members to employ the skill, although this was not statistically significant. As well as Gilmore's study questioning the effectiveness of providing contrasting, opposing models, it also suggests, by showing the different results they produce, that the use of more than one model (6 models were used altogether in this study) may remove the behaviourist-imitation emphasis in favour of the apprentice aspect of modelling. In other words, if a number of models are provided, the trainee may be actively involved in observation and subsequent choice of behaviour.

In research designs where a video model was compared with just the written transcript of the same video (Koran 1971, Phillips 1973; in MacLeod 1987), no significant difference was recorded. Presumably, these cases would have been dealing with verbal skills. It would be expected that a visual skill such as eye-contact, use of blackboard, etc, would be more effectively modelled by a visual example, and a difference measured. Of greater importance, MacLeod (1987) reports that various studies have revealed that training to focus on demonstrated skills in a discriminatory way, without actually trying those skills out in a teaching situation, can be

just as effective in changing teacher behaviour, as the practice/feedback component of the cycle.

Several examples of MT cycles (Perrott 1977, McIntyre 1977) emphasise the importance of the modelling stage of the cycle, as long as skills or concepts in question are discussed fully, and are related to a theoretical base (MacIntyre 1977, p144). These authors suggest that the trainee should observe (positive and negative) examples of that skill in isolation, and then be trained to identify that skill in the context of a lesson. Perrott explains that the video of a "model" teacher conducting a lesson should serve the dual function "of providing a clear performance model of how each skill can be used in a teaching context, and of helping the trainee to recognise and discriminate between the skills" (Perrott 1987 p765). She also suggests that prompt feedback on the correctness of such discrimination is essential at this point of the cycle. It does indeed seem likely that such a training in discriminatory observation could result in a change in teacher behaviour - the modelling component alone in this example represents more controlled training than many complete Microteaching cycles.

The model, then, is seen as a very important component of the Microteaching cycle, perhaps the most important, as some research has shown it can stand on its own as a significant training technique, when discriminatory skills are taught alongside.

#### 2.2.4 PARTICIPANTS

In many pre- post- experimental designs involving large groups of students and similar lessons taught on different days and to different groups, validity difficulties arise due to uncontrollable human factors, rehearsal and learning factors, sample size, cost, practical concerns in long-term studies, and so on. A variable in some research designs which

has proved to be successfully controlled for validity is that of the nature or personality of those taking part.

When the same trainee is tested before and after a MT experience, a valid comparison can probably be made, and changes attributed to the training inbetween. When a group of trainees take part in individual experiences assigned as randomly as possible, then even more valid comparisons can be made. Leith (1984) compared trainees grouped on two factors, extraversion and anxiety, suggesting from previous research that moderate amounts of anxiety seem to aid learning, perhaps by stimulating arousal. Four groups were formed

	Introvert	Extrovert
Anxious	A	C
Non-anxious	B	D

and exposed to two different MT conditions, one highly-structured with step-by-step instruction and carefully designed feedback, the other less-structured with no personal feedback. Significant differences were revealed between the groupings, and against a control condition.

In the first highly-structured condition, the groups achieved in this order; B, A, then C, with D achieving less than the control. Group D (non-anxious extroverts), Leith suggests, were inhibited by the rules and the structure. In the second condition, the Anxious Extroverts (C) achieved best, closely followed by groups D and B. Group A, Leith suggests, were "overstimulated beyond their capacity to avoid confusion" (p196).

These results clearly support the notion that a MT cycle is likely to be a successful venture for some trainees and not for others, depending on the trainees' personality type. This, of course, is probably the case for most general training techniques, and is not peculiar to Microteaching. What is significant about Leith's enquiry, is that it reveals that certain types of feedback and structuring may favour certain types of personality.

This research poses some difficulties with regard to the conceptual base for MT, which in all cases is, after all, aiming at some form of change in the trainees behaviour or attitude. Some Teacher Educators may in fact hold the hope that anxiety, for example, may very well be a personality feature which is undesirable in the classroom and which a MT cycle may be able to change. In other words, while in Leith's study, the degree to which a teacher displays extroversion may be regarded as unimportant for success in the profession, many would say that anxiety is something which should be controlled.

Many studies report a change in self-concept and self-confidence after a MT experience (eg Stanton 1978, Copeland 1982), supporting the apprentice or guild concept of mastering one thing at a time. Copeland (1982) reports the findings by Hanacheck (1971) that "pupils of teachers whose self-concept is higher demonstrate higher academic achievement than do pupils of teachers with lower self concept" (p1011). If universally accepted, this would seem to support the MT concept of changing teacher behaviour and attitude (self-concept), something which only a complete MT cycle involving microlesson and feedback could achieve.

Perlberg (1987) refers to the MT laboratory as a "safe-practice ground", an environment he asserts must be present in every classroom for innovation to take place, but more importantly in the MT cycle for confidence to grow and anxiety to diminish (p717). Research quoted so far regarding the

nature of the "participants" supports this concept, as does research on the attitude of the participants (McIntyre 1977)

Salient characteristics of the pupils in a Microteaching class is another category of variable which has also been investigated. Many studies have made direct comparisons between peers and pupils (Johnson & Pancrazio 1971, Levis 1973) but few have returned any definite findings.

In those cases where such a distinction is present, trainee teachers show a preference for teaching pupils rather than peers - they regard this as "real teaching". Such a preference could however simply be a demonstration of the teacher trainee's eagerness to "taste" the real classroom situation rather than any reasoned willingness to observe and practice new teaching skills.

Although trainees may prefer teaching pupils, research indicates that the classroom isn't necessarily the place where teaching behaviours are most effectively learnt. Levis (1973) required students to include three questioning skills in Microteaching to peers and to high school pupils. Only the use of higher order questions was at a higher level for pupils, with no difference between the groups in the use of probing questions or in fluency in asking questions. Levis' study reported that interest lessened as the Microteaching programme progressed for students teaching peers.

### 2.2.5 SUPERVISORS

Much of the research dealing with the modelling component also concerns itself with the role of supervisors. Some however, specifically addresses the issues of supervisors' strategies in the feedback stage of a MT cycle. In one example of such research (McIntyre 1977), four different types of supervision were used, ranging from positive reinforcement, to complete impartiality. No statistical difference between any of the four treatments

was found (p141). A questionnaire of students' attitudes however, indicated a "preference" for a supervisor who actually pointed out ways to improve teaching, to a supervisor who merely pointed out appropriate teaching skills. McIntyre also reported the interesting data that "all groups wanted more of what they did not receive, and less of what they did receive" (p141), and concluded from this that a most effective MT experience is one with a variety of supervisory approaches, enabling trainees to make use of such variety.

Wragg (1984) reports two studies where the supervision phase of the Microteaching cycle was excluded, and reports that in both cases, the absence of a supervisor had no effect on teaching performance. The first of these by McAleese (1976), reported that there was no significant difference in performance ratings between 10 trainees who were supervised and 10 who were un-supervised. (The un-supervised interestingly thought they were doing better than they were). The second study by Illingworth (1971) found no difference between a group 15 first-year trainees who received feedback from peers, and a similar group who received supervisor feed-back.

However, there are so many differences in experimental conditions here (performance ratings, sample size, age/experience of trainee, etc), that definitive guidelines on supervision can not possibly be made. One researcher who appears to have carried out the most comprehensive review of this area is Griffiths (1976). He has identified three broad conceptualisations of the supervisors role; 1) where the supervisor gives feedback on how well the trainee has imitated the model 2) where the supervisor acts in a counselling role, and 3) where the supervisor acts as a facilitator in the trainees' decision-making. He also states however, that research has failed to reveal a single, most-effective role for supervisors, explaining that "the professional literature has tended to

promote an eclectic approach based on a listing of possible and overlapping supervisory tasks" (p724).

#### 2.2.6 FEEDBACK

Of all component parts of the MT cycle, the feedback phase is perhaps considered by some to be the most important. It certainly is the phase which has received the most attention by researchers, which comes as no surprise if one recalls that the single most important influence on the emergence of Microteaching as a training technique was the development of advanced recording methods enabling immediate and continuous feedback.

The inclusion of a feedback phase has perhaps also added to the perceived status of Microteaching, increasing what Allen referred to as an "aura of professional mystique" (Allen 1980). The term "feedback" is one borrowed from the other sciences;

"In the physical sciences, the feedback concept can be traced back to the thermostatically controlled furnace invented by Drebbel (1573-1633) and the centrifugal governor invented by Huygens (1629-1695) for use in clocks. It was adopted for windmills and water wheels before being used by James Watt for the steam engine. James Clerk Maxwell (1868) was the first to analyse such phenomena in mathematical terms and can be regarded as the father of modern control theory." (McFarland 1981).

Although Microteaching can be broken down into components for the purpose of research, it is clear from this review that the components are in no way distinct, each one overlapping with the others. The issue of feedback therefore has been raised already under other headings, and general conclusions about its role have already been made.

One of the earliest writers on this subject remains influential, being referred to often in recent literature. Bandura (1977), through his social learning theory, explains that feedback (in general terms) strengthens and maintains responses that already exist in a person. Comparing the modelling and feedback phases of MT, Levis (1987) paraphrases Bandura;

"Modelling is regarded as an acquisition, while feedback functions as a performance variable. Modelling enables trainees to acquire a skill; feedback helps them to adapt the skill to their own personality and to teaching situations other than those demonstrated by the model." (p725)

With this distinction in mind, three of the major types of research are discussed: the quality of the feedback, the presence of discrimination training, and the mode of feedback. Wragg (1971) tried two different types of feedback; - video and observation data (interaction - analysis). He found that neither condition resulted in a change in behaviour, but a combination of them both did. Such a result supports the views already stated that for a MT programme to have much effect at all, the participants must be actively involved, especially at the feedback stage. It would seem that in Wragg's study, the interaction analysis data enabled the trainees to make some sort of link to their own performance.

A slightly different source of feedback, this time from pupils, was provided to trainees in studies at Stanford and Chicago Universities (Ryan 1974). Trainees received feedback from one of three sources - evaluation forms filled out by pupils, a summary of those forms via the supervisor, or the pupils forms together with supervisor's comments. Despite the unusually large sample size (80 students), there was no significant difference among the three groups after feedback.

The video mode, as mentioned, has become the most popular method of storing and replaying trainees' performance, but as Levis (1987) states: "That videotape feedback is more effective in producing behavioural changes than other forms of feedback has been more often assumed than tested" (p724). For reasons already stated, videotape has indeed become immensely popular and almost synonymous with Microteaching, even though the originators Allen & Ryan (1969) have clearly stated: "Videotape recording is a frill ... it is not an essential part of the microteaching process" (p54). Examples of research regarding the use of video are so

numerous that they are not summarized individually here. Despite Allen and Ryan's claim, video has remained almost synonymous with Microteaching, as shown in reviews by Turney, Clift, Dunkin and Traill (1973, pp20-24) and Hargie and Maidment (1979, p62).

The divergence of reactions to viewing oneself on video, prompted early researchers to enquire as to the real effects such self-confrontation has on a trainee. Ten years after MT had begun and had disseminated around the world, Fuller and Manning (1973) attacked the idea that videotape was as effective as most people believed. Self-confrontation is, they conclude after a comprehensive review of literature related to all sorts of video self-confrontation, "more promising than we dared hope, and more dangerous than we knew to fear" (p512). What is it about receiving visual feedback which could be so dangerous? Levis (1987) summarises Fuller & Manning's findings:

"a) videotape feedback can be a stressful, anxiety-producing experience: objective representation of the self can be more anxiety producing if the subject is already anxious; videotape representation of self involves a selectivity and focusing on self which makes such a feedback experience more arousing emotionally, and different from other representations of self  
b) initial exposure to videotape replays causes intense self-focus on visual-cues;  
c) for videotape feedback to be successful, it should be done in situations where the subject feels basically secure; moderate rather than extreme dissonance has been found to be more effective in bringing change in nonattitudinal matters." (p723)

Fuller & Manning include a great number of studies from outside the area of Teacher Education which illustrate the positive and negative effects of visual feedback. It would seem that there are just as many people who are "closed" and defensive, as there are "open and trusting" (p511), and it is these people who may find the totally revealing video-tape presentation too demanding. "Those who are vulnerable and without capacity to change can be damaged" (p511)

One author (Stones 1984) warns of the video camera itself being used for purposes other than educational ones. He suggests care must be taken;

"to ensure that the machinery is used for pedagogical purposes and not to gratify the supervisor's, the teacher's or the technicians' desire to play the professional television production team. A slick, dramatic, artistic, technically excellent production is not the aim of the exercise and this fact needs to be held firmly in mind by supervisors or they will be seduced without their knowing it." (Stones 1984, p25/26).

A mode of feedback which may be less threatening than video, is an audio-record of a MT experience. A small number of studies have specifically confronted the issue of the effectiveness of audio-tape compared with video-tape. Leonard et al (1971) compared three different modes of feedback on a small group of students (n=12), using a comparison of teaching performance as the measure of success of each mode. The modes were; audio feedback, video feedback, and supervisors comments. No statistical difference was found among the groups, although the video group showed gains in "indirect teaching influence" and "student talk".

Shively, van Mondfrans, & Reed (1970) used a larger sample (37 students) to compare four different feedback modes, (audio, video, observational data, and the Stanford Teacher Competence Appraisal Guide, a rating schedule), and found in this case that the audio-tape was the most effective at effecting a change in teacher behaviour. The observational data from a live lesson was least effective. When the trainees' attitude was questioned, both the audio and video groups were significantly higher. From the results of this study, Shively recommended the use of audio-tape recorders in the Microteaching process.

Clift et al (1976) used an even larger sample group of 72 students to explore the effects of different modes of feedback (audio vs video) and the presence of supervisors - four groups were formed. No difference was found between any of the four groupings, although the author reports that for those students rated low on the first teaching session, audio feedback

had a positive effect on their teaching behaviour, and for those rated high, audio feedback had a negative effect.

An important contribution to the discussion has been made by Levis (1987), when he suggests that rather than one mode being superior to another in the feedback area, it is the nature of the skill which determines which mode will be most effective. Although there is no specific literature to support it, the claim is made that feedback on verbal skills will be best served by audio feedback, while feedback on skills with visual elements would benefit from video feedback. At first glance, this would seem quite acceptable, but when other research is taken into account, it can be seen that other factors (such as personality-type, familiarity with MT concepts, etc) must be considered, as well as the nature of the skill, when deciding on a mode of feedback.

#### 2.2.7 OTHER RESEARCH

It can be seen therefore that most of the Microteaching literature can be organised under the four headings, "Modelling, Supervisors, Participants, and Feedback", although the examples quoted above illustrate the difficulty researchers have had in isolating the components for experimental purposes. Some examples of the research which do not fall easily under one of the above headings, follow.

Brown (1975) tested specifically the long-term residual effects of a MT programme, continuing a line of enquiry which has interested a number of researchers. This particular series of studies showed a significant lasting effect of a MT programme on the teaching performance of those who took part. But as McLeod (1987) suggests, such an experimental result may simply show that those trainees who are good at demonstrating skills, can do just as well in a laboratory as in a classroom.

Two groups were trained identically in the use of certain skills (Levis et al 1974), with micro-lessons taking place in two different settings, one a normal school environment, the other a microteaching laboratory. When compared by means of an audiotape recording of performance, the MT group achieved better than the school group. Although, as McLeod (1987) points out, such a result may simply be a consequence of the audio-recording favouring the MT group, it is significant that when directly compared, two identically trained groups achieved substantially different results, due to the learning environment.

## 2.3 MICROTEACHING IN SPECIFIC SUBJECT AREAS

Another area of research which doesn't easily fall under the four main headings above, is the effects different subject-areas have on the outcome of the Microteaching experience. Apart from some general statements suggesting that verbal material may perhaps be best recorded by audio devices, and non-verbal (or visual) skills recorded by video, little has been written regarding any specific differences between MT programmes applied to distinctly different subject areas, such as Art, Physical Education, Social Studies, or Music.

McIntyre, McLeod, and Griffiths, (1977), when publishing the findings of many experiments carried out at the University of Stirling, invited colleagues involved in the MT course there to comment on the programme from a subject specific point of view. Four viewpoints are forwarded from Science, English, Modern Languages and History specialists, and the first reaction from these authors is that if any differences are apparent, then they may possibly be explained not by the nature of the subject itself, but by the nature of the trainees attracted to that subject.

### 2.3.1 SCIENCE

Davies (1977) insists upon a holistic view of teacher behaviour and therefore teacher training, but argues that in the area of Science teaching, some specific skills suit the MT process very well: "guided discovery, explaining complex ideas with a variety of audio-visual aids, small group discussion of experimental results to encourage attempts at generalisations by pupils, formalising familiar commonsense experiences in a framework of scientific knowledge, etc." (p292). Science, indeed, appears to be a subject area which has been used extensively in the literature.

### 2.3.2 MODERN LANGUAGES

In the specific subject area of Modern Languages, MT is seen by one author (Johnstone 1977) to have both strengths and weaknesses. The concept of short-lesson, single skill, teach-reteach, seems to be quite unsuited to the Modern Language teacher, who had difficulty in breaking down their subject area into easily definable micro-skill areas. Johnstone suggests there is a need to relate "skills" to "strategies", using examples (p241) to illustrate that very often a trainee may be demonstrating a skill or group of skills at a high level, but the actual learning which takes place is negligible. The idea that a skill is only part of an immense repertoire, needs to be emphasised to the Modern Language teacher, according to Johnstone.

Three "adaptations" of MT in the Modern Language setting seem to have been successful, when "harnessed" with other training approaches, namely Lesson Planning and Teaching Strategies (Johnstone, 1977, p244/5). In this particular setting, and with this personal, MT is regarded as most useful for "providing a meaningful context in which aspects of Modern Language teaching may be analysed and discussed..." (p245), not a specific skill training technique.

### 2.3.3 ENGLISH

Gilmore (1977) argues that there is a quite distinctly different approach to MT between social science and humanities' students. He explains that "unlike the student of modern languages whose lesson strategies are mainly programmatic, or that of the science student who often employs heuristic procedures in his teaching, the English student's approach is often hermeneutic or interpretive" (p235). Because of the nature of English as a subject, Gilmore maintains that "Microskills are less relevant to the trainee English teacher than the more global aspects of teaching; e.g. the

selection and sequencing of the content, lesson-planning, choice of optimal lesson strategies in relation to content and the like" (p237).

#### 2.3.4 HISTORY

The above three authors are joined by Lloyd (1977) in the History area, who has some reservations about the "gap" between the learning of individual skills, and the integration of those skills into an accessible and flexible package for the classroom. Of the four, it is perhaps the History teacher who speaks most enthusiastically for MT, along with the science teacher. Significantly, Lloyd says that "perhaps the most signal contribution that MT programmes...have made, is the promotion of more flexible attitudes and greater professional awareness in students" (p251).

Isolated examples of research into the relative effectiveness of MT in other subject areas exist in the literature, although there appears to be little relating directly to practical subject areas, such as woodwork, Phys Ed, or Art. It would seem that with the many models of Microteaching disseminating from the original, these subject areas could make use of the theoretical aspects relevant to their specific needs.

## 2.4 MICROTEACHING IN MUSIC EDUCATION.

Little has been written about the use of Microteaching in the education of Music Teachers. It seems that Music, along with those practical subjects mentioned above, like Physical Education and Art, has been neglected in the discussion which has affected Microteaching in recent years.

This may be explained by the fact that the original terms of reference for Microteaching focused on questioning skills and teaching techniques for the general classroom. Added to this, the fact that music is perceived as a "specialist" subject may have discouraged the use of, and research into, Microteaching in Music Education. More importantly, perhaps, is the idea that Music in the classroom has historically been regarded as an "extra" to the "core" of subjects studied, and has only recently enjoyed some attention research has brought. A brief history of trends apparent in the development of Music Teacher Education serves to illustrate this.

### 2.4.1 BACKGROUND OF MUSIC TEACHER EDUCATION

In recent years, a philosophy of Music Education has emerged in response to the growth of Music as a subject taught in primary and secondary schools (see references cited below). Up until the middle of this century, a music-lesson was primarily the responsibility of a private music teacher, with some schools including singing and music appreciation as an "extra" to the core curriculum.

As a "practical" subject, many perceived aims were achieved by group practical activities such as group singing, relatively easy to organise and economical with regard to staff input. In New Zealand, since the development of a syllabus and curriculum guidelines (1945,1963), the music lesson has changed considerably, although the "large-group activity" still features in many schools under the guise of a "music lesson". The private music lesson (from a Registered Music Teacher) still remains, but it is now

the right of every pupil to expect some musical training during school years.

With the development of psychometric tests of musical aptitude and ability (Wing 1936, Seashore 1930, Drake 1953,) the music lesson gained a little more respect from the curriculum developers and education administrators. By the 1960's, textbooks began to include issues such as the content of music lessons, at what age it should be taught, and how such learning could be measured. The International Society for Music Education (ISME), set up in 1956, was the first attempt to co-ordinate the many different approaches to school-based music education which were emerging at this time, influenced by conservatories of many different countries (eg, Curwin, Kodaly, Dalcroze). It now enjoys great success as an administrative body controlling many developments in the related fields of Music Education. (The Journal of the International Society of Music Education is published annually, current editor A. Kemp, University of Reading, England.)

International Journals began appearing as early as 1908 with Music Teacher in Britain, and Music Educators Journal appearing in the United States in 1914. Various journals in different countries have continued to appear with two significant additions around the middle of the century being Education Musicale in France (1945) and Journal of Research in Music Education in the United States in 1952. The latter has been a major force in developing Music Education philosophy, together with the British equivalent Psychology of Music, first published in 1973. More recently, Music Perception (1983) and Psychomusicology (1981) have contributed to the increasing number of journals related to Music Education, with these latest additions reflecting the recent emphasis of Cognitive Psychology on the development of Educational theories.

Textbooks published in the last five years also reflect this emphasis; Music Cognition (Dowling 1984), The Cognitive Psychology of Music

(Sloboda 1985), The Developmental Psychology of Music (Hangreaves 1986), Music as Cognition (Serafine 1987), and Music, Mind and Education (Swanwick, 1988)) They have contributed to the discussion by refining and redefining the topics involved in a philosophy of Music Education. These texts continue the thread from earlier texts such as Psychology for Musicians (Buck 1944) and Psychology of Music (Seashore 1967), which, as mentioned above, grew as a response to the use of psychometric music tests.

In many countries, the training of music teachers as specialists has followed a similar path of development. As in other practical subject areas such as, for example, Home Economics and Art, the specialist Music Teacher has in the past been recruited from the private sector of teachers who have not traditionally been associated with a formal learning institution. [In the case of Music Specialists in New Zealand, many who were to be eventually employed by schools and colleges, were first members of the Registered Music Teachers Society, a body which was organised long before any school-based Music Teachers group (Jennings 1978). This group has been responsible for a very high standard of professionalism in their organisation and administration of training and accreditation policies, and has provided New Zealand schools with many well-qualified and accomplished musicians.]

When Teachers Colleges in New Zealand and other countries began to assume the role of training specialist music teachers, they faced the responsibility of providing a classroom based training programme incorporating the practical skills of trained musicians with pedagogical methods, and of responding to the demands which the growing Psychology of Music Education was making of the profession. It has been the role of the Teachers' Colleges therefore to enhance the expert skills of teachers from one specialist area (private music teaching), for use in another

closely related, yet different area, that of the school classroom, while all the time responding to ongoing developments in music education. In more recent years, this role has been further expanded to include basic skill training in the specialist areas of performance and composition, as well as providing models and theories of teaching specifically relevant to the music teacher. Teachers' Colleges encourage, and indeed require, the participation of all trainees in some form of practical music making and in the application of fundamental music skills in a teaching situation. Specialist trainees participate in the study of musical styles, in composition and performance, and most importantly in the application of acquired knowledge in the planning and practice of music lessons, for both full classroom and Microteaching environments.

#### 2.4.2 MICROTEACHING IN MUSIC TEACHER EDUCATION

It may be expected that a Microteaching format as outlined earlier would lend itself easily to the subject area of music and the education of music teachers. Perhaps the performance-based nature of music teaching, with its continuous rehearsal and inbuilt feedback (features found also in a Microteaching programme), has resulted in Music Education not feeling the need to associate itself directly with a MT format. Very little has been written on the area of Music and Microteaching, the use of feedback in Music Education, or indeed on the general area of the training of music specialists for the school classroom. Some examples of the literature are included below.

Carpenter (1971), in an article dealing mainly with a practice popular at the time, (that of using televised music lessons in American schools) refers to the use of videotape recording in pre-service teacher training as Microteaching, here being regarded as an opportunity to "provide the student with a structural basis for continuing self-evaluation"(p17). He suggests that

..."microteaching is especially helpful in music education because it contributes to the students ability to cope with the synchronous nature of the art; viz, the music teacher must be able to perform simultaneously many of the following tasks: read and interpret the score, conduct or play an instrument, listen for intonation, phrasing and balance, detect performance errors, and identify myriad performance and stylistic problems. The immediate re-experience of a given lesson or rehearsal provides an otherwise unavailable opportunity for the evaluation and development of these important operational skills" (p17).

It would appear that any of the four approaches to Microteaching outlined earlier in this chapter (2.1.2) could accommodate the above philosophy to some degree. Carpenter suggests that the composite role of a music teacher is highly suitable for the type of individual treatment Microteaching is able to give to separate skills, and eventually to groups of skills.

A second example of Microteaching in Music comes from Stanford University, where, while general Microteaching developments were being advanced in the 1960's, the Music Department at that institution was taking advantage of the availability of the new technology and training procedures. Kuhn (1968) reviews the use of MT there, stating emphatically that the MT concept can apply directly to music education. Trainee music teachers at Stanford were asked to "work towards direct musical involvement on the part of the pupils" and "to utilise some of the new curricular methods and materials of music education discussed previously in class" in their microteaching planning.

Although, as expected from Stanford in 1968, the main emphasis of this MT programme is on skill acquisition ("the focus in microteaching is on instructing ... in the use of certain skills and concepts of teaching"), there is also reference to a "sensitisation" process, particularly concerning the use of reinforcement. "They also become sensitised to the effective use of positive gestures, facial expressions, and arm and hand motions" (p52). But perhaps the most important claim in favour of MT in music made by

Kuhn is that "identifiable, common characteristics and qualities of effective teaching can be utilised within one's own field of curriculum specialisation".(p53)

McQuerrey (1968) refers to a specialised use of video-feedback in music rehearsal. He suggests that an application of the Stanford "teaching skills" to music can reveal a group of five teaching skills which are

"definable, overt, trainable and of justifiable value: training in set, training in the use of voice and in giving clear directions, training in closure, training in stimulus variation, and training in establishing appropriate frames of reference"(p50).

Although these are clearly important teaching skills for every classroom teacher, this list does not include anything of unique relevance to the music teacher.

McQuerrey adds a cautionary note to the end of his review, explaining that "rapid, definite behavioural change may be expected [from microteaching], but it can be positive or negative. The use of video equipment should be preceded by careful planning and directed by experienced teaching staff". (p53)

The three articles cited above, written around the time of great interest in the new MT practice, are non-investigative by nature and refer to only one form of feedback, that of videotape. And of the research mentioned earlier in this literature review regarding the effectiveness of different modes of feedback (2.2.6), none made reference to a specific subject area such as music.

A study by Nelson (1980) attempts to compare different feedback modes in the area of Music Education. Three feedback procedures were examined: systematic self-observation of videotaped music lessons, unguided self-observation of videotape, and verbal feedback from instructor. Nelson found that there was no significant difference amongst the three

feedback groups when acquired teaching skills were assessed in a post-test situation, but that all three groups were significantly higher than the control group.

This study, although making an important contribution to the research, remains limited in its generality for two reasons. First, of the three different feedback modes, the two involving videotape are closely related. Although one of these groups was required to count specified behaviours using interval recording techniques, and the other simply to view the videotape unguided, the central focus of feedback remained a videotape of the lesson. As discussed earlier, the actual viewing of oneself on video, whether counting behaviours or not, can be a stressful enough experience to contaminate any outcome. The difference between these two conditions is slight.

Second, the importance of this study for Music Educators is diminished when the teaching skills involved are examined. Nelson states "selected music teaching skills included teacher verbal reinforcement, non-verbal reinforcement (facial expressions and touches), and the use of instructional time." As was the case for the argument of McQuerry (1968) above, the specificity of such teaching skills to the music classroom is questionable - although obviously of use to all classroom teachers, these skills offer nothing which is uniquely applicable to the music teacher.

Is it possible then that Microteaching, using primarily visual processes, has nothing specific to offer Music Education? Nelson, in her literature review, identifies four frequently used feedback types: "instructor verbal comments, audiotape analysis, computer printout, and videotape observation". She utilises only the first and last in this list in her 1980 study, avoiding one which would seem to have considerable importance for Music Education - audiotape analysis.

## 2.5 SUMMARY

The literature discussed in this chapter has unfolded the evolutionary development of the Microteaching process. In this development, a number of different research approaches has been apparent, each contributing to the shaping of Microteaching in different ways. Some research has compared audiotape and videotape feedback modes, and there has been some discussion on the use of Microteaching in Music Education. In summary, the research indicates a number of general points.

First, Microteaching as a form of teacher education has become accepted by a large number of institutions .

Second, Microteaching has, since its beginnings at Stanford University in the 1960's, developed to accommodate different philosophies of what should take place in a teachers' training.

Third, most research on Microteaching has focused on one or more of the following integral components: modelling, participants, supervisors and feedback.

Fourth, there have been few attempts to determine the success of variations in the Microteaching process for different subject areas.

Fifth, although some research has applied Microteaching to Music Education, none appears to have been carried out which compares the feedback modes of videotape and audiotape.

## CHAPTER 3. THE PROBLEM DEFINED

### 3.1 INFLUENCES OF THE LITERATURE

Conclusions drawn from the review of the literature influenced the present study in a number of specific ways.

First, the sensitisation or cognitive-skills approach (see 2.1.2) is favoured over the "behaviour modification" model involving successive approximations of a single skill. A Microteaching programme employing this approach will be regarded as effective if there is a change in the discrimination skills of the trainees taking part.

Second, the "modelling" component is emphasised to ensure, as Ferrott (1977) suggests, that a model serves both as a demonstration of the appropriate (and inappropriate) skill, and as an opportunity for trainees to improve their discrimination skills. The literature also indicates that skills should be taught in isolation first, and then within a context, and that prompt feedback on the correctness of such discrimination is essential at this part of the cycle.

Third, in general Microteaching programmes, where different types of feedback have been tested, there seems to be little difference between a visual or an aural replay (except where a skill is sense-specific). After initial shyness is overcome with video review, this mode seems to be well received by trainees as a medium by which a true record of the lesson is represented. But this medium also seems to have negative effects on some people, self-confrontation interfering with the aim of observing and evaluating teaching activity (Fuller and Manning 1973). Audio records were found by at least one writer to be as effective as video (Shively et al, 1970).

Fourth, there appears to be no evidence in the literature that one particular form of feedback is better suited to Music Teaching than another form. Some research identifies particular strengths of different components of the Microteaching cycle for particular subject areas (Section 2.3), but the only conclusive finding of the research directed at Music Education, is that some feedback is better than no feedback.

### 3.2 RESEARCH PROPOSALS

Fuller and Manning (1973) question the assumption that video is by definition the best form of feedback for a Microteaching exercise. Leonard et al (1971), Shively et al (1970), and Clift et al (1976), all investigated the use of audio-tape as a feedback mode, and found it as effective as video. It is therefore proposed that in a music Microteaching exercise,

- 1 there will be no difference in the effects of an audio-tape and a video-tape on trainee's self-evaluation.

Shively et al (1970) also found that the experience of the live lesson with no feedback (except immediate recall) was least effective in changing teacher behaviour. It appears reasonable to suggest that

- 2 there will be a difference between the evaluation from memory, and the evaluations from both audio and video.

Numerous studies have incorporated comparisons of teaching conditions, and it is generally perceived by participants that teaching children is more realistic and therefore more productive than teaching peers. However, Levis (1973) reported that apart from a lessening of interest in the Microteaching programme from those teaching peers, there was little other difference between the groups. Therefore, it was expected that

- 3 there will be a difference in the level of interest between the MT groups, but no difference in the accuracy of rating, after changes in feedback.

### 3.3 RESEARCH DESIGN

The present study proposes to examine the effectiveness of a Microteaching cycle (including the considerations outlined above) in the Music field, and specifically to examine the differential effects of using audio and visual feedback in this area. A short task (to teach a 2-part song to a small group of Std 3 children) will be performed by 32 trainees after they have observed and discussed a "master" lesson of this activity. This "demonstration" phase of the cycle will involve observing certain conducting and leadership skills in isolation, and then identifying them in context. The micro-lesson will be video-recorded, and the trainee will evaluate the experience in 3 ways; from memory (immediate recall), from audio-tape, and from video-tape. The evaluation device is a 10-item questionnaire, with a seven-point response schedule, plus space for general comments. As the same evaluation form is used for all three modes, a comparison can be made of the effectiveness of each mode in providing feedback to the trainees.

The "effectiveness" of the feedback modes will be examined by comparing the self-evaluation ratings of trainees' micro-lessons with evaluation ratings given by a panel of experts, who as trained practitioners, will also view the video of each trainees' microlesson, and grade the trainees' performance using the same criteria.

## CHAPTER 4. METHOD

The study compared two microteaching conditions, and three feedback modes. Also of consideration in the study was the aspect of whether a microteaching programme can be economically efficient with regard to time restrictions, and financial restraints within the College structure. To have any degree of external validity, it would seem important that the experimental conditions could be replicated in the normal running of a training institution.

### 4.1 SUBJECTS

The participants were 32 trainee music-teachers in their second year of preservice training, (29 female, 3 male; average age 20.4). In the first two terms of this year, the trainees took part in microteaching programmes in local schools. These teaching sessions involved 2 or more trainees teaching a song to 15 pupils within a 20-minute time span. There was no formal feedback or evaluation of the four teaching sessions available in either of the two programmes. The trainees were therefore familiar with the concepts of reduced class size, task and time-scale, but were not familiar with the concepts of feedback and self-evaluation in the microteaching exercise.

The study randomly divided the trainees into two groups, a peer-teaching group (College) and a pupil-teaching group (School). Each trainee therefore became his/her own control within the different teaching environments.

## 4.2 PROCEDURE

All trainees attended the same introductory and demonstration lessons, planned for 2 one-hour sessions in the week prior to the first microteaching session. These sessions included a full description of the aim of the Microteaching Programme, a master lesson-plan (Appendix D), an introduction to the evaluation form (Appendix E), and 2 demonstration lessons.

Trainees rehearsed using the evaluation form so that they could become familiar with its contents before being asked to use it for their own teaching. It was impressed on them that they were required to complete three evaluation forms, and that the correct order of completing the forms was important - first from memory, secondly from audio-feedback, and thirdly from video-feedback. (The evaluation form is discussed further in Section 4.3)

Four one-hour filming sessions were available, and with two video cameras, one at School and one at College, 8 trainees were filmed each week, resulting in a sample size of 32. The soundtracks of the lessons were immediately transferred to audio-tape, and both tapes (audio and video) made available to the trainees through the Teachers' College playback facilities. Trainees were requested to complete the first evaluation form immediately, and the audio and video evaluation forms as soon as possible afterwards. It was the trainee's responsibility to complete these second and third forms, in response to the audio and video tapes, within one week. No problems were anticipated with only 8 trainees each week requiring playback facilities - a similar process had worked successfully with third-year trainees earlier in the year.

Table 4.1 -- Filming schedule

Session	College Group	School Group
1	Introduction to the Microteaching Programme. Demonstration of teaching skills and method. Practice using the Evaluation Forms.	
2	Demonstration Lesson II. Further practice with, and discussion of, Evaluation Forms.	
3	Trainees 1,2,3,4, filmed. Remainder act as pupils.	Trainees 17,18,19,20, filmed. Remainder teach.
4	Trainees 5,6,7,8, filmed. Remainder act as pupils.	Trainees 21,22,23,24, filmed. Remainder teach.
5	Trainees 9,10,11,12, Filmed. Remainder act as pupils.	Trainees 25,26,27,28, filmed. Remainder teach.
6	Trainees 13,14,15,16 filmed. Remainder act as pupils.	Trainees 29,30,31,32, filmed. Remainder teach.
7	Questionnaire distributed to both groups.	

The College group was required to act as "the class", with one trainee teaching and being filmed, at one time. Although the other trainees acted as pupils, each trainee had only one opportunity to teach the group, and did not have any opportunity to practice the task before being filmed, although a rehearsal effect of watching others may have been present for some trainees, and some vicarious learning may have taken place.

At School, the 16 trainees were divided into 4 groups, each group situated in one of four teaching spaces available. Two classes of Standard 3 & 4 (9 & 10 year-old) children were divided into 4 groups of about 15, and each group received a 10-12 minute lesson from each of the 4 trainees assigned to that group; that is, all trainees taught on each day. As only one trainee of each group was filmed each day (four in total), some trainees had the opportunity to practice their microlesson before being filmed.

The presence of practice effects for both groups should not, however, influence the study, which is concerned with a comparison of 3 different self-ratings of a single microlesson, and a comparison of these ratings with those of an expert. It is not concerned with a comparison of the level of performance of the actual lessons.

### 4.3 EVALUATION INSTRUMENT

Although some research has applied Microteaching to Music Education (see Chapter 2.4), none of the studies appear to have included either teaching skills or evaluation items specific to the music classroom. The evaluation form to be used in the present study consists of 10-items, including some which are general in nature, but also including some specific to the music teacher (see Appendix E). For example, item 9 requires trainees to evaluate the musical activity of their pupils, by asking whether "Musical performance was corrected, when necessary"

Each item has a seven-point rating scale with behavioural indicators provided at four positions along that scale. The four behavioural indicators for item 9 read:

1. Children are often encouraged to improve their performance.
3. Class sometimes encouraged to improve their performance.
5. Class occasionally encouraged to improve their performance.
7. No encouragement to improve their musical performance.

Such indicators are standard procedure when constructing rating scales (see Brown, 1975, p150, Turney, Clift, Dunkin and Trail, 1973, p103), serving to assist the respondents with their self-evaluation. Included with each item is space provided for any additional response to the question, and there is also space for comments encouraging the trainee to elaborate further in a general manner.

During the introductory sessions, each item on the evaluation form was explained in detail. This list of items therefore served also as a guide to the type of planning and teacher behaviour required from the trainees. A summary of the explanation given to trainees is included with the evaluation form in Appendix E.

#### 4.4 DATA RECORDING

Microteaching records were available after the 4 week period in the form of both audio and video recordings of 32 individual 10-12 minute lessons of similar content, 16 taught to peers and 16 taught to pupils. Data were collected from participants in the form of self-evaluation forms completed in response to listening to (audio) and viewing (video) these recordings, and also completed immediately after the lesson (no feedback).

The study also required that each video recording was then evaluated by a supervisor, in this case the author. Rater reliability was determined by % agreement on a proportion of trainees, between this rater and one other member of the Music Department staff. Analysis took three forms:

First, by totalling the ratings on each of the three evaluation forms for all 32 trainees, a comparison of the resulting total ratings was made. This would reveal general movement trends, positive or negative, in the trainees' ratings due to feedback mode.

Second, it was possible to note the magnitude and direction of any change in evaluation response according to item type.

Third, the supervisor's ratings were totalled, and a comparison made between this "expert" rating and the trainees' three totalled ratings. (Further discussion of the "accuracy" of the "expert" rating is provided in 5.2.1 - page 57). Such analysis would examine the relationship between the trainee's and the expert's rating to determine in particular which feedback condition returns a rating closest to the expert rating, and which feedback condition (if any) produces unrealistic responses from the trainee.

All three forms of analysis took account of the two teaching conditions to examine differences in the evaluations due to teaching environment.

Finally, a brief questionnaire was administered to the groups (Appendix F) asking for a general response to the programme under headings of time, task, model, feedback, etc. Together with informal interviews and discussions with the participants, this questionnaire sought to reveal any trainee preference or perceived value in the different aspects of the Microteaching programme.

## CHAPTER 5. RESULTS

### 5.1 CHANGE IN TRAINEE RATING

#### 5.1.1 COLLECTION OF DATA

Twenty-eight of the intended thirty-two trainees completed the whole microteaching exercise, and submitted three self-evaluation forms covering the three feed-back modes. This resulted in a sample size of 28; 14 in the College group, and 14 in the School group.

Each trainee completed an identical evaluation form for each feedback mode rating themselves on 10 questions using a seven-point scale. This produced 30 ratings for each trainee, three for each item on the evaluation form. For greater clarity in reporting data, and in making comparisons, the rating scale was converted to a weighted scale, reversing the ratings from 1=high, 7=low, to 7=high, 1=low. For example, a rating of Memory 3, Audio 3, Video 2, is converted to read Memory 5, Audio 5, Video 6.

All ratings were then summed to produce a total rating out of 70. The benefits of using a summed rating, apart from the obvious one of clear comparison, include the fact that only large differences in a trainee's self-evaluation will register. It was considered that these advantages outweighed the issue of a total rating being somehow artificial, remembering that the total rating was used only in comparative analysis, and not as a measure of achievement. Summed ratings for each trainee on each feedback mode are presented in Table 5.1, and in graph form in Table 5.2.

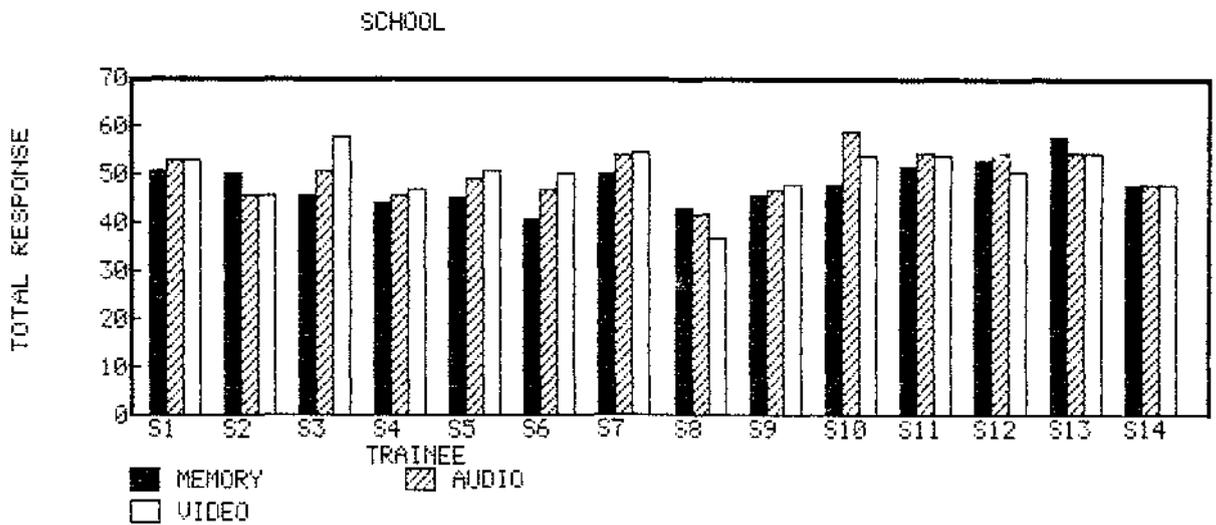
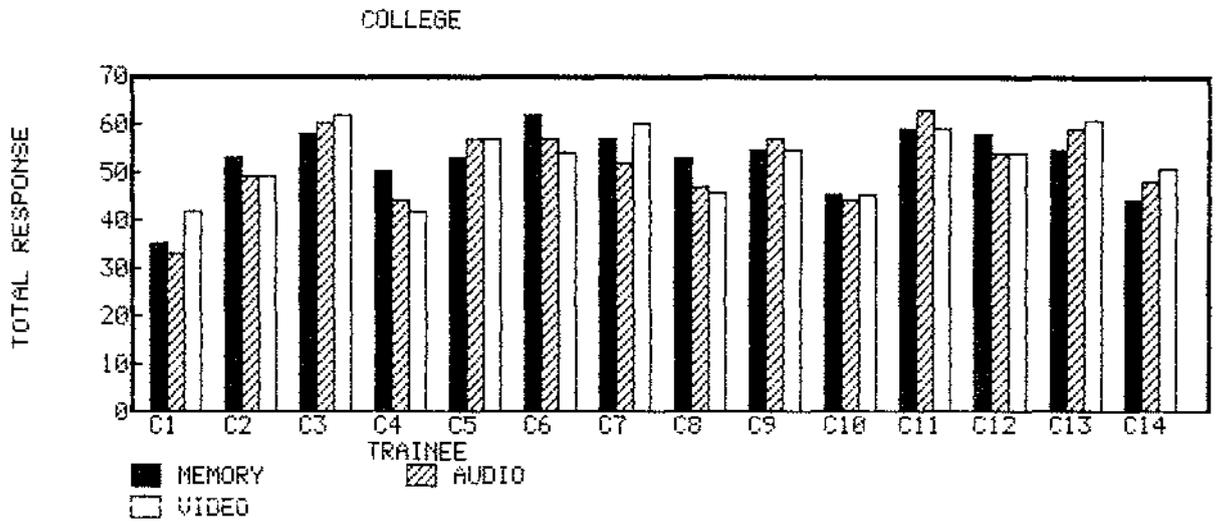
Table 5.1a - College Group Summed Ratings

Feedback Mode			
Trainee	Memory	Audio	Video
C1	35	33	42
C2	53	49	45
C3	58	60	62
C4	50	44	42
C5	53	57	57
C6	62	57	54
C7	57	52	60
C8	52	47	46
C9	55	57	55
C10	45	44	45
C11	59	63	59
C12	58	54	54
C13	55	59	61
C14	44	48	51

Table 5.1b - School Group Summed Ratings

Feedback Mode			
Trainee	Memory	Audio	Video
S1	51	53	52
S2	50	46	46
S3	46	51	58
S4	44	46	47
S5	45	49	51
S6	41	47	50
S7	50	54	55
S8	43	42	37
S9	46	47	48
S10	48	59	54
S11	52	55	54
S12	53	55	51
S13	58	55	55
S14	48	48	48

Table 5.2 - Trainee Summed Ratings.



### 5.1.2 DIRECTIONAL TREND OVER THREE EVALUATIONS

The analysis is interested in observing any change apparent across the three evaluation ratings. There are three broad trends possible: a positive trend where a trainee increases her rating with a change in feedback; a negative trend, where the rating decreases; or a non-directional trend, where the introduction of feedback does not appear to influence rating one way or the other. Three examples serve to illustrate this further.

First, where a trainee's rating is positively affected by feedback. Trainee S3 returned three ratings, Memory=46, Audio=51, and Video=58. This would indicate that the trainee had the impression immediately after the lesson that she had met the aims of the lesson reasonably successfully. After listening to an audiotape of the lesson, the rating was increased to 51, and further increased after viewing a videotape.

Second, where a trainee's rating is negatively affected by feedback. Trainee C4 rated Memory=50, Audio=44, and Video=42, indicating an opposite trend where first listening to the lesson decreased the rating, and then viewing the lesson further decreased it.

Third, where neither a positive nor a negative trend is apparent, but a combination of them both. Trainee S10 showed this trend, with Memory=48, Audio=59, and Video=54. Here the trainee increased her rating after hearing a recording of the lesson, but decreased it after seeing the video, although remaining higher than the initial Memory rating.

Tables 5.1 and 5.2 show that twenty seven (96.5%) of the sample of twenty-eight registered at least one change in their total self-evaluation rating over the three evaluations. Eight trainees showed an overall decrease, 10 showed an increase, and 7 showed no unidirectional change. Three trainees showed very little or no change across all three modes. There is no significant difference between the two teaching conditions, pupils (School) and peers (College). No one single trend is therefore apparent from these initial figures, suggesting at this stage that no one mode of feedback stands out as particularly influencing trainee rating. In other words, there were roughly equal numbers of trainees who were encouraged by feedback, as there were discouraged, and as there were not affected.

### 5.1.3. ANALYSIS BETWEEN MODES

Further analysis is possible when changes between just two evaluations is considered - that is, between Memory and Audio, and then between Audio and Video. It is also of interest to compare the Memory evaluation with the Video.

Table 5.3 shows the number of trainees who changed between two modes, and the magnitude of those changes. (See Appendix G for details of magnitude and direction of individual changes.) There is very little difference between teaching condition, School and College. The Total sample figures show that 27 trainees changed their rating when Audio feedback was introduced, with 102 actual changes recorded. When Video feedback was introduced, 21 trainees changed their rating, with only 66 changes recorded. This could be explained in two ways:

Either the introduction of video had less effect on trainees' self-evaluation because the material in the video provided no extra information, the trainee already being informed by the audio tape. Or there was a rehearsal or repetition effect evident which resulted in some trainees, by the third self-evaluation, simply repeating what they had already written.

Table 5.3 - Number of trainees who changed rating  
and magnitude of changes

	Memory to Audio		Audio to Video		Memory to Video	
	Number	(Total Changes)	Number	(Total Changes)	Number	(Total Changes)
College	14	(54)	11	(36)	11	(63)
School	13	(48)	10	(30)	13	(64)
Total	27	(102)	21	(66)	24	(127)

Table 5.4 - Direction of changes

	Memory to Audio			Audio to Video			Memory to Video		
	N	Pos	Neg	N	Pos	Neg	N	Pos	Neg
College	14	6	8	11	6	5	11	6	5
School	13	10*	3	10	4	6	13	9	4
Total	27	16	11	21	10	11	24	15	9

\*  $p = .046$  (Sign Test)

When the direction of changes between feedback mode is considered (see Table 5.4), the only result of any significance is the School group after the Audio mode. Ten of the thirteen ( $p=.05$ , Sign Test) trainees changed their rating in a positive direction when audio feedback was introduced. Even when the size of individual differences is taken into account (Wilcoxon Test - see Appendix H), this result remains statistically significant ( $p=.05$ ).

This may be suggesting that for the School group, an initial low self-rating after Memory mode was positively influenced by the introduction of the Audio tape. When Video tape was introduced, a less definite influence is apparent, with 6 of this group reacting negatively, 4 positively, and the remaining 4 not changing their rating.

When the video rating is compared with the initial memory rating, however, almost the same number appear to have been affected by video as by audio. So although the significant result of Audio seems to be supporting the idea that audio feedback is helpful for self evaluation, the almost identical result for video may indicate either that each is as helpful as the other, or that the initial "Memory" feedback was very weak and that perhaps any mode of feedback would effect a change. The introduction of video after audio can certainly be said not to have further increased the rating - the lack of any real difference between audio and video feedback is discussed below in Section 5.5.

The College group situation seems less clear, with about 50% of the group being affected either way by each feedback condition. When both College and School groups are considered together, a general trend becomes apparent where the Audio feedback encourages a positive response and where the introduction then of Video results in a negative response.

The analysis so far indicates that for the Total sample, but mainly for the School group, the introduction of Audio feedback positively affects a trainee's self-evaluation. The introduction of video feedback after audio feedback does not further increase this rating - in fact, after video feedback, the rating is decreased, although it is still higher than the original memory condition. (The possibility of an 'order' effect being present has been discussed earlier in this section - page 52)

It is possible that such small differences between ratings from the three sources of feedback indicate that the scales are closely related in what they are measuring. In order to investigate the relationships between the feedback modes, the Spearman Rank-Order Correlation, corrected for ties, was used. (The rank order of ratings is listed in Appendix I). Table 5.5 summarises the information, presenting correlations for the whole sample, and for both teaching conditions.

Although they are not significantly different, the coefficients here do support the trend which has emerged already. The video feedback was less closely related to the memory feedback (.64), than was the audio feedback (.75), suggesting that when trainees heard themselves on audiotape, their self-rating was not very different from the initial memory response, and when trainees viewed themselves on videotape, their self-rating was still close to the memory response, but not as close as the audio.

Also of interest from these figures, is the very high correlation between the Audio and Video responses, suggesting very little difference in the response to the evaluation form on these two modes. This perhaps indicates more that the rating scale was not sensitive enough to register differences between the feedback modes. (Correlation coefficients between individual items on the evaluation form are also high - see Appendix K.)

Table 5.5 - Correlation Coefficients

	Memory to Audio	Audio to Video	Memory to Video
College	.82	.91	.71
School	.69	.81	.48
Total	.75	.86	.64

## 5.2 COMPARISON OF TRAINEE AND EXPERT RATING

The discussion has centred on any movement or change of trainees' own ratings generated by the introduction of feedback, and has identified a slightly stronger influence from audiotape than from videotape. No account has yet been taken though as to whether such increases or decreases in trainee rating are realistic or well-founded. In order to investigate this, each trainee's three ratings were compared with an "expert" rating. The method of obtaining the "expert" rating is described below.

### 5.2.1 EXPERT RATING AND INTER-RATER RELIABILITY

The author viewed all 28 video recordings, and rated each trainee on the same 10 items of the evaluation form. These ratings are presented in Table 5.6.

A second rater, also a member of the Music Department with experience in Microteaching, rated 10 (36%) of the videos chosen at random from both teaching conditions. This provided an inter-rater reliability of 86% agreement (within + or - 1). (See Appendix J for details of inter-rater reliability)

Both raters were familiar with the criteria used for rating and had been involved in both the planning and supervision of the microteaching programme. This involvement, together with the knowledge that both raters were experienced with many facets of the pre-service training of music teachers, including in-school teaching practice and college-based microteaching programmes, gave support to the notion of an "expert" rating. The inter-rater reliability of 86% agreement was considered strong enough to use the expert rating in the study as an accurate indication of a trainee's performance on the set task.

Table 5.6a - "Expert" Ratings

(College)

Trainee	Rating
C1	38
C2	45
C3	57
C4	53
C5	44
C6	35
C7	55
C8	52
C9	47
C10	51
C11	40
C12	53
C13	46
C14	42

Table 5.6b - "Expert" Ratings

(School)

Trainee	Rating
S1	52
S2	59
S3	49
S4	47
S5	56
S6	52
S7	43
S8	38
S9	44
S10	47
S11	52
S12	61
S13	52
S14	46

By using trainees' ratings reported in Table 5.1, and Expert ratings reported in Table 5.6, two comparisons can be made. First, the level of agreement between the two can be established for each feedback mode, and second, the effect each feedback mode had on a trainee over-rating can be determined.

### 5.2.2 TOTAL AGREEMENT BY FEEDBACK

The comparison used in this analysis is a simple matching of the total rating-scores, to establish which of the 3 trainee rating-scores is closest to that of the supervisor. No account is taken at this stage of the direction or magnitude of any difference. For the purposes of this analysis, when a trainee has the same rating-score on more than one feedback mode, the mode which is first in the sequence is counted. For example, Trainee C2 has ratings 53 49 49, and has an expert rating of 45. This is interpreted as a result in favour of the audio mode, because this rating was completed before the trainee viewed the video.

Of ratings completed from the three different modes of feedback, those completed immediately (from memory) most closely matched the ratings of the supervisor. Table 5.7 shows that 64% of the whole group rated themselves the same as, or closely to, the expert's rating, when they used the first mode of feedback, ie, immediate recall. There was no difference between the proportion of trainees who found the audio-feedback (18%), and those who found the video-feedback (18%), the best for providing a rating in agreement with the "expert"

Table 5.7 - Number of trainees whose rating agreed with "expert" rating, by teaching condition.

	Memory	Audio	Video
College (N=14)	11 (79%)	2 (14%)	1 (7%)
School (N=14)	7 (50%)	3 (21%)	4 (29%)
Total (N=28)	18 (64%)	5 (18%)	5 (18%)

When the sample is compared by condition, (College and School), a greater number of the College group (79%) found the Memory mode most effective, while 50% of the School group found this mode effective in providing a rating in agreement with the "expert". Less than a quarter of the College group (14% & 7%) rated themselves accurately after listening or viewing, while these modes provided half (21% & 29%) of the school group with an accurate recall.

A slightly different picture is emerging here. While the earlier analysis suggested that the Audio mode influenced trainee rating the most, the comparison with "expert" rating above indicates that such an increase was unfounded, and that the Memory mode (or initial evaluation) was actually most realistic. These findings are discussed more fully in Section 5.5, together with issues of design which may actually limit the generality of the results.

### 5.2.3 OVER-RATING BY CONDITON

A further analysis of interest compares the total trainee ratings (Table 5.1) to the expert ratings (Table 5.6), to reveal the number of trainees who over rated their teaching. Positive differences of 5 points or more are included here as large enough to be considered an indication of over-rating. This is a different comparison from those above, and by including all trainees who have rated themselves higher, a general indication of the effect of feedback modes can be determined. (Table 5.8)

Overrating was more prominent after the video feedback in both conditions (College 64%, School 21%). More College group trainees over-rated themselves than School group trainees on all three feedback modes.

This adds another dimension to the analysis. The results have shown that Audio feedback increased trainee rating, but that Video decreased it again (Table 5.3). Comparison with the expert rating has shown however that the initial rating from memory was actually the most accurate (Table 5.7). And now, the results shown overleaf indicate that the video feedback encouraged trainees to overrate their microlesson. An interpretation of this, together with a discussion of differences between the School and College groups appears in Section 5.5 below.

Table 5.8 - Number of trainees who rated themselves higher than expert by 5 or more points.

	Memory	Audio	Video
College (N=14)	7 (50%)	6 (43%)	9 (64%)
School (N=14)	2 (14%)	2 (14%)	3 (21%)
Total (N=28)	9 (64%)	8 (57%)	12 (85%)

### 5.3 CHANGE BY ITEM

The analysis was also directed toward establishing the rating scale as a sensitive evaluation instrument, and to exploring the effect that individual items have on trainee rating. (See Appendix E for the evaluation items). It was expected that there would be varying degrees of change for different items due to the nature of the item. Items 1, 4, and 7 dealt with the lesson introduction, planning and involvement of pupils, three parts of the Microlesson which were easily controlled, and therefore little difference was expected between feedback modes.

Items 5, 6, 8, and 10 were concerned with the lesson aim, achievement of the objectives, use of reinforcement, and general teaching methods, and were expected to generate more changes than items 1, 4, and 7, but less than items 2, 3, and 9. A moderate change was anticipated.

The remaining items, 2, 3, and 9 were directed to teacher enthusiasm, uses of gestures and actual performance, three subjective, unplanned behaviours relying on teacher-pupil interaction, and so it was expected that these items would be most strongly influenced by enhanced feedback, and therefore produce large changes in self-ratings.

In summary,

little change was expected from items 1, 4, and 7

moderate change was expected from items 5, 6, 8, and 10

large change was expected from items 2, 3, and 9.

Table 5.9 presents the changes made by trainees on individual items, between the different feedback modes. The Wilcoxon Matched-pairs Signed-ranks Test is applied to these figures, to indicate whether the direction and magnitude of the changes are considered significant to a level beyond .05.

Table 5.9 - Number of rating changes by item

Memory to Audio

-	Item										Total
	1	2	3	4	5	6	7	8	9	10	
College	9	5	4	6	8	11 <sup>^</sup>	5	8	10	9	75
School	4	6 <sup>^^</sup>	6	6	6	7	4*	5*	7	5	58
Total	13	13	10	12	14	18	9	13	17	14	133

Audio to Video

-	Item										Total
	1	2	3	4	5	6	7	8	9	10	
College	7	6	9	6*	8	7	5	7	6	5	66
School	2*	8	8	7*	4	7	6	10	5	2*	59
Total	9	14	17	13*	12	14	11	17	11	7	125

Memory to Video

-	Item										Total
	1	2	3	4	5	6	7	8	9	10	
College	8	9	9	5	6	6	3	10	11	10	77
School	2	8	9	9 <sup>^</sup>	8	11	7	8	9	7	78
Total	10	17	18	14 <sup>^</sup>	14	17	10	18	20	17	155

<sup>^</sup> = 0.1

<sup>^^</sup> = 0.5

\* = <0.5

(Wilcoxon Matched-pairs Signed-ranks)

When total changes by item are considered, the trend which has appeared in Section 5.1 is repeated, with the largest number of changes occurring between Memory and Video, followed by the changes which occurred between Memory and Audio, and the changes occurring between Audio and Video being the smallest in number.

Because of the very low number of items which generated a strong result, one way or another, the 10-item evaluation form cannot be regarded as an sensitive measurement device. For most items, there were as many positive self-rating changes as there were negative. High correlation coefficients between individual items also indicate a close association between the evaluation forms on different modes (see Appendix K).

Four items proved to have a strong influence on the School group. Between the Memory and Audio modes, items 7 and 8 both generated a uni-directional shift, and between the Audio and Video modes items 1, 4, and 10 resulted in a unidirectional change.

Item 4 on planning also influenced the College group in the same way between Audio and Video modes, the six trainees who changed their rating, doing so in the same direction. Item 4 also influenced the School group ratings when the difference between Memory and Video modes is analysed.

When the total figures are reviewed, it becomes clear that the degree of change followed approximately that which was anticipated. Table 5.10 presents the mean change of item groups outlined above. In each of the three analyses, the items which were expected to have the least change (1, 4, and 7) did in fact record the lower number of changes. There was a large change on items 2, 3, and 9, as the mean of 15.20 indicates, which was expected. The items which it was anticipated would encourage a moderate change, (5, 6, 8, and 10) have a mean of 14.75, which is between the other two item groups.

Table 5.10 - Mean change by item-group

	Item group		
	1, 4, 7.	5, 6, 8, 10.	2, 3, 9.
Memory to Audio	11.3	15.25	13.3
Audio to Video	11.3	12.5	14.0
Memory to Video	11.3	16.5	18.3
Mean	11.3	14.75	15.20

## SUMMARY

From figures shown in Tables 5.1, 5.2 and 5.6, the following general findings were reported. Audio feedback was seen to positively influence trainee rating of the microlesson, especially for the school group (Tables 5.3, 5.4, Appendix H). Video feedback tended to distort trainee rating, when it is compared with an expert rating (Table 5.3). But in terms of agreement with the expert rating, the initial feedback mode or Memory condition produced the most concordant outcomes. (Table 5.7)

However, results are confused even more because of the high correlation between feedback modes (Table 5.5, Appendix K), especially for the College group. And when the rating scale is examined (Table 5.9), it is found that as a measurement instrument, it is not very sensitive to issues of audio or video feedback.

Conclusions can be drawn from these findings nevertheless, and are discussed in Section 5.5. The following section first considers responses to the questionnaire, which also influence the final discussion.

## 5.4. QUESTIONNAIRE RESPONSE

### 5.4.1 INTRODUCTION

All participants were asked to complete a brief questionnaire (Appendix F) which included 3 direct questions concerned with the nature of the task, the time, and the teaching environment, and 2 indirect questions concerned with what they "liked" and "disliked" about the whole Microteaching exercise. The questionnaire responses of the trainees may give an indication of their preferences or opinions on the value of specific aspects of the programme and would help illuminate the discussion of the rating scale data. There was an 82% response rate to the questionnaire (23 were returned, from 28 distributed).

### 5.4.2 TEACHING ENVIRONMENT

The questionnaire responses revealed as expected that the College group found working with peers to be unrealistic and repetitive.

"Didn't really teach as one would in a classroom situation"  
(Trainee No C8)

"I didn't like having to hear and do the same songs over and over -  
it got a bit tedious" (C3)

The "interest" and "effort" in the present exercise, even though both teaching groups were "supervised" by the personnel normally associated with Microteaching, certainly remained higher for the School group. Of note here is the fact that the School group consistently took a shorter time to complete the self-evaluation form and questionnaire. The College group required many reminders to keep on task and complete the forms, indicating perhaps a general dissatisfaction with the exercise of "acting like children" for their peers.

Although some of the College group commented positively about the "peer-teaching" environment

"Much easier with older students" (C9)

"Gave us confidence with own age group" (C13)

"Informal atmosphere meant we weren't pressured to work at someone else's standard" (C14)

the general response was that the peer-teaching situation was unrealistic and repetitive. This is despite the fact that it was impressed on all trainees at the outset, that this was an exercise in self-evaluation more than one in teaching, and that they were to take this into account when planning and teaching. It is apparent that, even with the built-in potential for a successful, musically rewarding lesson, the peer-teaching experience was sufficiently removed from the "real classroom" to prevent most members of the College group from regarding it as an opportunity to practice teaching and to evaluate that performance.

Four of the College group respondents indicated however that they found the peer-teaching rewarding, as it gave them the opportunity to

"watch peers taking a lesson and learn from them" (C3)

"watch peers teach: you realise you're not the only one to botch up sometimes" (C6)

"see others' abilities to teach" (C11)

Such a factor, although only mentioned by four of the College group, may have had an advantageous "rehearsal" effect on all members of this group. All College group trainees had to a greater or lesser extent, the experience of watching others teach, which may have enhanced this group's performance, and therefore their overall rating. The possibility that such an increase in rating may have been associated more with a familiarity with the subject matter than with an improvement in actual teaching, is discussed later in the chapter.

#### 5.4.3 TIME SPAN

Microteaching, along with reducing the lesson content and the number of pupils, also reduces the time span of the lesson. Of the 21 Trainees who replied to the question about the reduced time span of the lesson, 15 found it satisfactory (71%), with no significant difference between the two teaching groups. Of the 6 who found it too short (29%), 5 were from the School group;

"20 minutes would be more appropriate, therefore allowing for practice and improvements" (S6)

"10 minutes was not enough time to correct singing of children and get through plan of work" (S7)

"You just get there, warm up, and you have to go" (S13)

This again indicates perhaps a greater desire by the School group to treat the exercise as a real teaching experience. Only one of the College group suggested that the time was too short, wanting "more time to correct mistakes being made" (C9). The remainder of the College respondents found the time

"generally O.K." (C11)

"enough to get things done" (C7)

"I got through all my activities quite well" (C13)

"Had time to do what I wanted to" (C14)

"Any longer and I wouldn't know what to do" (C12)

#### 5.4.4 TEACHING TASK

When asked to respond to the difficulty of the task set, more of the College group found the task "just right" than "too easy", this number being even higher than the School group, suggesting that most found the task relevant to the situation. Many of the College group indicated, however, that the repetition of material (many Trainees used the same songs) affected the level of performance due to rehearsal;

"College teaching meant class knew the songs" (C8)

"everyone knew all the songs and could sing them anyway" (C6)

"I got sick of some songs" (C7)

and therefore affected the way they individually responded to the group. One may expect, if this was the case, that the College group would respond that the task was "too easy". They did not, a discrepancy which may be explained by the general trend of the College group already seen, to regard the exercise as an "unreal" teaching experience, resulting in a failure to adjust their performance and planning to make the most of the opportunity to practice the task.

"I can't understand why we need to practice on each other when everyone already knew the songs" (C3)

Nonetheless, at least one College group trainee seemed to understand the task

"it wasn't exactly as a true class would be, but organisation and communication skills were the same" (C12)

The attitude of the College group may be summed up by one Trainee who commented:

"All should be in schools. It got very monotonous here at College" (C8)

#### 5.4.5 INDIRECT RESPONSES

Other indications of interest from the Questionnaire include reference to a well-defined model on which to base the teaching. Of the nine Trainees who mentioned this, 4 were from the College group and 5 from the School group, perhaps showing a similar relevance independent of the type of teaching group. Trainees from both groups liked;

"a basic plan that could be stuck to" (S11)  
"having something specific to work towards" (S4)  
"to be given the guidelines at the start" (C6)  
"We had a good introduction, and could model that" (S7)

The self-evaluation aspect of the exercise was specifically mentioned by some also (8), with 75% of those coming from the School group;

"it's better to be able to evaluate yourself now and change things" (S8)  
"able to listen and watch yourself. Good evaluation exercise" (S2)  
"it provided an opportunity to evaluate yourself" (C7)

Some specifically mentioned the presence of a camera while they were teaching;

- "being watched by a camera is very nerve-wracking" (S8)
- "the video made you nervous" (C10)
- "we need a less conspicuous form of filming" (S10)

while others indicated that they would appreciate the opportunity to review the tape with a supervisor;

- "to talk about the way it went and offer advice for the future" (S5)
- "to give a short evaluation of good teaching techniques used, and a brief summary of things to develop" (C14)

No one expressed a direct preference for one mode of feedback over another, although most enjoyed the chance to see themselves on video. Two people questioned the use of an audio tape as well as video. When asked if the Music Department could use their video recording in the future, 12 denied permission, and 11 gave permission, 9 of whom came from the College group.

#### 5.4.6 SUMMARY OF QUESTIONNAIRE RESPONSES

Item	School Group	College Group
Teaching conditions	Very relevant	Unrealistic. Some enjoyed working with older students
Time span	Generally satisfactory. Some found it too short.	Generally satisfactory. Some found it too long.
Task	Very appropriate	Very appropriate
General-positive	Model Chance to evaluate self.	Model Chance to see others teach.
General-negative	Presence of camera	Presence of camera Teaching peers.

## 5.5 DISCUSSION

### 5.5.1 EFFECTS OF FEEDBACK MODE

Research reported in Chapter Two (2.2.6) suggests that video feedback is the most successful means of providing information about a teaching experience. Some research has indicated however that there are negative aspects in the use of video (Fuller & Manning, 1978, Levis, 1987), in particular that self-confrontation can distort the evaluation process for anxious students, a situation less likely to occur in the use of audio-only. It could be expected in a subject area which is more than usually weighted towards the aural experience, that audio tape could provide a source of feedback as informative as video. This study set out to explore this possibility.

The results are clear enough. Despite several limitations of the study with regard to design (see below), it can nevertheless be concluded that there was no real difference between the two feedback modes, audio and video, in their function of providing a source of information for a trainee's self-evaluation. This is supported by the analysis of results which indicate no major change in rating (Table 5.9), and also no major difference in rating when compared to the Expert rating (Table 5.7).

At first, this would seem to negate the suggestion that an audio mode is better suited to a subject like music. The lack of any real difference may perhaps be explained however by the absence of any reluctance on the part of the trainees to use video, and consequently the absence of any negative side-effects from the video feed-back. The situation may now exist that attitudes to video and self-analysis have changed since Fuller and Manning (1978) reported a negative response from anxious subjects, due to the general increased exposure to videos in homes and in schools.

It is possible that a rating scale which was more sensitive to aural aspects of teaching, and less to behaviours which relied on the visual mode, could have produced a different result. (See Table 5.9)

Of greater interest though, is that when the Memory mode is included along with the other two modes in a comparison with the Expert rating (in an attempt to establish effectiveness), the results suggest that this "no-feedback", ie, memory, mode actually is more accurate in producing a realistic evaluation than the other modes. Taken that the "expert" rating is an indication of good and appropriate teaching behaviour, (supported by a high inter-rater reliability), this finding suggests in its simplest interpretation that both an audio and a video feedback mode distort a trainee's evaluation of what occurred in the lesson, and that an immediate evaluation of a lesson without feedback is more accurate; ie, in closer agreement with the "expert".

This interpretation is put in a different light however, when the design of the study is taken into account. Trainees were required to complete the evaluation forms in a strict order; Memory, Audio, and then Video, with the situation possibly arising that, being unskilled in using a mechanical source of feedback, trainees changed their rating unnecessarily, perhaps feeling that they were required to simply by the design of the study. This is quite possible with a group of inexperienced self-raters, aware from the outset that there were to be three different sources of feedback.

Because the study did not include a reteach phase, it is not possible to comment on whether feedback actually influences subsequent teaching behaviour. This can only be assumed by an interpretation of the rating changes after feedback, an assumption which underlies many research exercises (see 2.2.6), as well as the present study.

## 5.5.2 TEACHING CONDITION – PEERS/PUPILS

Although research has suggested that there is no real difference between pupil teaching and peer teaching, the results reported here indicate that the peer teaching condition was in fact a largely unrealistic environment, supporting the trainees' own perception, apparent from the questionnaire responses. The number of trainees who over-rated themselves in all feedback conditions (Table 5.8), was at least 3 times higher for the College group than for the School group.

Both groups followed the same trend in agreement with the Expert (ie, Memory mode most accurate), with the only real difference between groups evident in the Video mode, where 4 times as many School group trainees agreed with the Expert than College group. (The number of trainees in the video category though was very small – see Table 5.7)

The School group generally was less affected by the variety of feedback modes than the College group, returning agreements of 50% from Memory, 21% from Audio, and 29% from Video. (See Table 5.7) This difference from the College group, which was in high (79%) agreement in the Memory mode, but low agreement in Audio (14%) and Video (7%) modes, can possibly be explained by the general diminishing of interest for this group as the Microteaching programme progressed. It was more difficult to sustain interest for this group, suggesting perhaps that they perceived the teaching environment as unrealistic, whereas interest from the School group was maintained throughout the whole programme.

Table 5.5 showed a consistently higher correlation between feedback modes for the College group than for the School group, which is perhaps a further indication that the teaching environment and attitude of these trainees affected their perception of reality to the extent that differences between feedback modes were very slight.

The trend for the School group to be more responsive to changes in the mode of feedback was also indicated by their inclination to respond positively to the Audio and Video feedback (see Table 5.4). As already discussed, the introduction of Audio feedback affected 10 School group trainees to improve their self-rating ( $p=.05$ ), and the introduction of video affected 9 to improve their self-rating ( $p=.15$ ). These self-rating changes possibly result from a greater level of interest as a direct consequence of perceived realism in the MT programme, even though these ratings actually have a low level of agreement with the Expert rating (Table 5.7).

The School group perhaps had an initial low concept of how their teaching went, which improved when supported by feedback. This would seem to be the case for anxious trainees, who being observed in the "heat" of the classroom with real children, have difficulty in remembering the positive points of their teaching. The College group's reaction was more balanced, neither audio nor video causing any significant uni-directional changes in rating. The first rating for the College group was in high agreement with the Expert.

### 5.5.3 LIMITATIONS

The present study adopted a design which attempted to keep all variables except one constant. A more usual split-group design, with some subjects in one condition (eg, Audio), and some in a different condition (eg, Video), would have failed to account for differences in the nature of the subjects and differences between the teaching encounters. In this study, the variable in question was not the student, nor the lesson, but the evaluation as a result of source of feedback.

The present study nevertheless had a variety of design limitations.

First, the rating scale was not specific enough to detect differences in the effect of feedback mode (see 5.3). Items which were more sensitive to issues of hearing and vision may have generated widely different responses after Audio and Video feedback. This problem was evident in the design of earlier research.

Second, although a good inter-rater reliability was obtained, the concept of an "expert" rating and comparison of this with a trainee's own rating is questionable.

Third, the sample used was small, with only 14 subjects in each group. Differences between groups, and especially within a group were therefore small and difficult to generalise.

Fourth, the design requirement of trainees to complete three identical evaluation forms resulted in a certain degree of familiarity and a decline in interest, particularly for the peer-teaching (College) group.

Taking these limitations into account, less emphasis perhaps should be placed on the result which indicates Memory (or no feedback) as most effective at producing an accurate evaluation. Of greater interest to the music teacher is the indication that there exists no real difference between Audio and Video feedback. For the pre-service and inservice teacher educator, a tape recorder may provide as much information needed for evaluation purposes as a video-tape, and possibly in a less threatening form.

#### 5.5.4 CONCLUDING REMARKS

Accepting the limitations of this study, in particular that both the use of the expert rating as a measure of accuracy and the evaluation form as a sensitive measurement device are questionable, it can nevertheless be concluded with regard to the original hypotheses (see Chapter 3) that

1 There was little difference between the effects of an audiotape and a videotape on trainee rating. This would suggest that for economic reasons alone, an audiotape can be promoted as a source of feedback. There was no evidence from analysis of change by item type, that one mode was superior to the other for an aural-based subject like music.

2 There was a large difference between the evaluations from mechanical feedback, and evaluation from no feedback. No-feedback evaluation appeared to be the most accurate in terms of agreement with an expert rating. As it stands, this would suggest further research into the use of feedback at all for a Microteaching programme which was not using the reteach stage, (although generality is limited by the design of the study).

3 There were some differences between the teaching conditions. A trend was apparent in the School group to alter rating, but for this changed rating to be less accurate. There was a trend for the College group to lose interest and perceive the teaching environment as unrealistic, resulting in their ratings being affected less by change in mode of feedback.

## CHAPTER 6. GENERAL DISCUSSION

### 6.1 INTRODUCTION

In the past twenty-five years since its inception at Stanford University, the concept of MT has been reviewed and reshaped, discussed and dissected by many workers and researchers. The review of literature provided in Chapter Two explained some of these attempts, showing that writers have approached the continual discussion from many different angles.

The effects of emphasising different components of the Microteaching cycle has been considered (eg, the role of supervisors, McIntyre 1977). The personality type of the teacher trainees taking part was studied (Leith 1984). The effect on self-confidence and self-concept has been measured (Stanton 1978). The characteristics of those being taught has been compared (Levis 1973). The type of feedback used has been investigated (Ryan 1974).

Microteaching has been investigated in different subject areas, although much of this work has been of a general nature and inconclusive in its findings (Nelson 1980). More recently, attempts have been made to organise MT into procedures which fit more easily into definitions of models of teaching (Katterns 1977).

One such model, the cognitive or "reflective" model, has as a primary aim the growth of a teacher's ability to reflect on performance and issues in the classroom (see Chapter 2.1.3). It has been proposed by various authors (van Manens 1977, Joyce 1988, McLeod 1977,) that a well-designed Microteaching programme can be responsible for encouraging a greater degree of reflection.

If such reflective thinking is to occur, it is likely to take place at the feedback or self-evaluation phase, a notion supported by Dewey (1935), who points out; "to reflect is to look back over what has been done to extract the net meanings which are the capital stock for intelligent dealing with further experience" (Dewey 1935, p87).

While the present investigation found that audio-tape, when compared with the relatively high-status video tape, was no less effective at providing feedback for self-evaluation, it also found that there was possibly a different kind of response from each feedback mode. As the present investigation progressed, it became apparent that a different level of response was possibly being generated by the two feedback conditions, beyond that which could be measured by the evaluation instrument.

Specifically, it seemed possible that audio feedback had a different effect on the level of "reflection" than did video feedback. To investigate this notion further, an informal, exploratory study was undertaken, of a similar design to the main study, but on a reduced scale.

The findings of this study are reported in the following pages, and although only exploratory in design, they contribute to the discussion by expanding on the main investigation. Chapter 6 continues with reference to differences between aural and visual perception within the context of the psychology of hearing, and concludes with a discussion on the implications of this for the future of Microteaching.

## 6.2 THE FOLLOW-UP STUDY

### 6.2.1 BACKGROUND

The follow-up study differed from the original in two ways - first a much smaller number of trainees was involved (5), and secondly, the teaching skills under observation (questioning skills of redirection and prompting - see Appendix L) were directly adapted from the original Stanford Microteaching skills, and were not specific to music. These skills were part of the MT programme in progress at the Teachers' College where the follow-up study took place, St Patricks' College, Dublin. (Background information on this College, and on Microteaching in Ireland and Great Britain is provided in Appendix N).

The follow-up study used a similar design to the main study reported in Chapter Four. Trainees prepared a short (5-minute) lesson on a subject of their choice, making sure there was planning for the target skills. This lesson was recorded by both audio and video tape, and trainees then reviewed the lesson with the help of an evaluation form (see Appendix M). As with the main study, trainees were required to complete two identical evaluation forms, after each of the two feedback reviews. A comparison of "audio" and "video" evaluation was therefore available along similar lines to the comparisons made in the main study.

The main differences between the original study and the follow-up study were the omission of the initial evaluation from "memory" or "no-feedback", and the omission of the "expert" evaluation. An extra dimension was included, that of interviewing the trainees involved. It was hoped that analysis of evaluation forms and interview responses would also give some indication of the level of reflective thinking that had taken place, a question not previously considered but which grew out of the original study.

## 6.2.2 RESULTS

A comparison of each person's two evaluation forms was possible, one from audio feedback and one from video feedback. On both parts of the evaluation, Redirecting and Prompting, the observations made by the trainees, requiring a tally of events, were essentially identical for audio feedback and for video feedback

Of greater interest are trainees' comments on the evaluation form.

As expected, the comments tended to be directly related to the mode of feedback. For example, some comments after video-tape feedback referred to visual factors;

"video helps improve one's posture"

"from looking at the video, it is clear to see the importance of being observant. At times, pupils were engaged in private discussion of which I was not aware".

"when you are reviewing the tape, you tend to watch the pupils and their reactions to the questions and because of this you don't fully listen to their answers".

On the other hand, responses after listening were related to aural factors.

Trainees stressed;

"the importance of the correct voice and tone, and the elimination of mannerisms and colloquialisms".

"clarity of voice is very important. Intonation is also important, as the tone of your voice can evoke interest in the children".

"you listen very carefully to the childrens' answers and you can analyse better how you asked the questions".

Further though, the comments made after audio-tape tended to be more reflective rather than simple observations. For example, one trainee's comment after listening to the audio-tape was;

"The questions most suitable for redirection are discussion rather than factual"

The same trainee's comment after viewing the video-tape was that

"some of the pupils answered out of turn".

Another trainee when asked to comment about redirection, after audio tape said that

"questions could have been formulated better",

and after video tape said that

"questions did not necessarily follow in the order intended."

It seems possible that audio feedback, because of the absence of distracting visual images and because it requires the trainee to concentrate more deeply on the lesson content, may generate a more thoughtful response to questions. The two examples above suggest that differences in response go beyond the obvious differences in information provided, and that the audio mode is encouraging a more "reflective" response. Other comments after audio include;

"the prompting was inadequate due to bad phrasing of the questions."

"the planning of the questions is vital, as is the amount of them".

Such responses indicate that some thought has gone into why planning is important, a response which was generally absent after the video feedback.

Although generally positive about the use of video, trainees did offer some interesting comments. For example;

"pupils may be aware that they are on camera, and may give different responses than they normally would"

Another trainee thought that using video resulted in

"focusing too much on how you look with the children".

This same trainee thought that using audio alone meant that

"your attention is engaged more directly towards what you say."

### 6.2.3 DISCUSSION

In general terms, the findings of the follow-up study supported those of the main study in that they showed little difference between audio and video tape in the ability of each to provide a source of feedback to trainee teachers. Any differences between audio and video evaluations were slight

in terms of providing information about the actual events which occurred in the microlesson, such as, for example, the number of times a question was redirected.

Some differences became apparent when trainees were required to elaborate their thoughts and comment on the lesson, in written form and in interview. As expected, comments after audio tape referred to aural details, such as tone, pitch, and intonation; and comments after video tape referred to visual details, such as posture and eye contact. In addition though, the comments after audio tape tended in some cases to be broader in outlook and more directly related to the teaching skill in focus.

In conclusion, the follow-up study was useful in adding another dimension to the general discussion of audio and video feedback. It has in a limited way shown little difference between the two for general observation, and it appears to have indicated that greater consideration of the original target skills and perhaps a greater degree of reflection may take place when trainees are not confronted by images, but are required to concentrate only on an audio recording of events.

If the findings of the follow-up study can be confirmed by further research using a larger sample and more highly sensitive evaluative devices, audiotape may prove actually to encourage a more reflective response and more questioning attitude. How could audiotape, perceived by many as a very much limited version of video tape and involving only one sensory channel, possibly result in a higher level of cognitive activity? An explanation possibly lies in looking at the processes involved in the perception of sound itself, and although requiring more coverage than this paper can provide, the work of Moore (1982) on the psychology of hearing provides some useful information.

### 6.3 MICROTEACHING AND AURAL FEEDBACK

Moore explains that the auditory perceptual process is governed by the same Gestalt theories as the visual process. Our listening requires us to perceive good continuation, similarity, and takes account of the figure-ground phenomenon, in the same way that our sight does. That is, for example, we "tune" in to a single source of sound against a background of sounds, and control our perception in these terms. (Moore, 1982, p202/3)

He also suggests that in the perception of speech we are constantly involved in a process of "active matching" (p211). This is a complex process involving a feedback loop found only in the auditory system and not in the visual perceptual system. It also involves a specialist auditory or acoustic memory, although the details of such a mechanism are uncertain (ibid, p226/227)

Moore provides many examples of research using sound waves and parts of the sound spectrum, suggesting that our auditory process is well geared to perceiving changes in the auditory stimulus. If this is so, it may be possible that such a process is active throughout our listening, and that a degree of discrimination and analysis is activated by aural stimuli that does not occur from other sensory channels. In other words, we are engaged in more highly complex discrimination when listening than when looking. Although Moore doesn't go as far as stating this, he does conclude that "the auditory process seems particularly well suited to the analysis of changes in the sensory input" (p191)

There is also some support for the idea in that for greater concentration on a sound stimulus, we close our eyes to listen. By concentrating our source of sensory input into one channel, we are enhancing our capability of perception and therefore of analysis. And perhaps we are even enhancing our capability of discrimination and reflection.

Clearly, this is a highly speculative case in support of aural input, or, in the event of receiving expected information, aural feedback. Much research in this area would be needed before any more conclusive statement could be made to support such a claim.

For example, some general research in the area of perceptual differences needs to take place. Such research could begin by using a sophisticated evaluation technique, designed to measure the level of discrimination and reflection, in a study involving two groups of people experiencing the same event, one involving vision and one not. The event experienced should be independent of the observers at this stage - it would seem important to establish any basic perceptual differences before including an element of self-analysis.

Of interest in this area would also be general research into the type of cognitive or reflective activity which takes place when a person listens to a radio and watches a television. With the development of sensitive evaluation instruments, the growing body of knowledge could then be tested in the area of self-analysis and criticism, and differences in source of feedback investigated.

Nevertheless, it is possible that there are strengths in the auditory process which counter balance the obvious strengths in the visual process, and which may go some way toward explaining the tentative findings of the present study. The implications of this for the music teacher seem particularly important, as it would seem that a subject area which already includes a high degree of aural discrimination would benefit if its teachers were encouraged through training methods involving aural feedback to become even more discriminatory about their teaching.

#### 6.4 THE FUTURE OF MICROTEACHING

At the outset of this study, Microteaching was introduced as a practice which received encouraging support from the Teacher Educators at a time when much pre-service training seemed irrelevant and undirected. Its structured format, use of technological resources, apparent ease of implementation and usage, and potential success in introducing and sustaining a wide variety of teaching skills not previously identified in such an organised manner, made it seem attractive to institutions which previously had relied on less "organised" methods of preparing teachers for the rigours of professional life in a school.

The major implication from this study is that the feedback stage of the Microteaching cycle is clearly one which is very important and needs further research to establish the effects of variations in source of feedback. Although part of the findings of this study revealed that a no-feedback or memory-only condition resulted in a high level of agreement between trainees and "experts" evaluation ratings, such a result cannot safely be generalised for reasons already discussed.

What may be likely to have greater impact on MT research is the tentative finding that there was little difference between audio and video feedback. This result is from a study which was very limited in its design, and which had many shortcomings. If a similar result can be replicated in a more methodologically sophisticated study, and with evaluation techniques designed which are sensitive to feedback source, greater efficiency of time and resources may be employed in MT programmes in the future through the use of the less expensive and cumbersome audio tape.

There is no denying that video tape provides a valid and useful source of feedback. As a source of recording and replaying teaching encounters, it is undoubtedly highly accurate and preferred by trainees and educators alike. It is no coincidence that the development of MT and the development of video technology occurred around the same time, despite Allen and Ryans (1969) claim that "video recording is a frill and is not an essential part of the Microteaching process" (p54)

It is felt however, that the 'poor cousin' audiotape can be used more effectively than it has recently been. And that particularly in the aural field of Music teaching, audio tape could provide an especially relevant source of feedback to teachers. This probably is in fact the case, although the present study, again through shortcomings in design, namely regarding the structure of the evaluation questions, failed to conclusively establish that.

What the present study did reveal though, was a similarity between the two feedback sources, and a tendency for audio feedback to encourage a level of response different from that of the video. On these grounds alone, the present study encourages the use of audio tape alongside videotape in the Microteaching cycle.

#### 6.4.2 FINAL COMMENT

The future of Microteaching itself depends of course very much on what developments occur in Teacher Education in general. And changes in that area in New Zealand depend directly on developments in the Education system as a whole. MT as devised in Stanford is now practised in that form in very few places. Many institutions which are interested in the concept have developed their own systems from the original. That its potential was perhaps never reached by institutions who dismissed it as

too rigid and inflexible is a sign perhaps more of the constantly changing nature of Teacher Education than of flaws in the basic concept itself.

Teacher Education is under constant pressure to address itself to changes in technological developments, in pedagogical thinking, and in what society expects of its schools and teachers. Schon (1987) has suggested that historically, Education as a profession has been poorly equipped with a "secure foundation of systematic professional knowledge" and that it therefore "yearns for the rigour of science-based knowledge and the power of science-based techniques." (p9)

That Microteaching was accepted so readily in the 1960s by Training Institutions and Education Departments was perhaps for this reason. It offered a highly structured cycle of instruction and learning, and in doing so placed the training of teachers nearer to the respected science-based professions. The inclusion of a "feedback loop" could even be explained as being borrowed from biology or mathematics, as explained earlier in Chapter Two.

Microteaching was also welcomed in its early days as it was a system which stood for an alternative to the simple apprenticeship system which was the main stay of Practical Training, and it promised to accommodate the diverse personality styles of trainee teachers. Its strength was seen as an adaptable training approach which could be adjusted and controlled to suit the various and diverse needs of trainees. Research has actually questioned the effectiveness in this regard, but at least it has provided one bridge in Teacher Education from the 'hit-and-miss' copying which went on before, to the training of a professional artist which is the aim today.

Schon also suggests that in the ongoing quest to educate this professional artist, the "reflective practitioner", educators must discover how "mature professionals can be helped to build their repertoires of skills and understandings on a continuing basis" (Schon 1987, p15). Such a growth begins of course in preservice training, and in particular in the practical component of a training programme. The challenge must be for the teacher educators, while focussing on essential teaching skills necessary for a beginning teacher, to do this in such a way that methods of enquiry and self-analysis are used which by their nature encourage reflection and which readily transfer to other levels of reflection when the trainee is ready.

Activities such as the analysis of feedback, self-evaluation, and self-appraisal involve skills of discrimination and reflection which when nurtured within the safe environment of a Microteaching programme, can take root there and become part of a teacher's ongoing thinking. The "reflective practitioner" is indeed the aim of many training programmes, and as already discussed, reflective action can be encouraged by Microteaching. That it can be enhanced by a variety of feedback techniques and sources, and in particular by the inclusion of audio feedback, is the premise of this paper.

## APPENDIX A

### Example of a Microlesson

from: Allen D W, and Ryan K A, (1969) Microteaching.

"A student teacher holds up before four children a picture of what appears to be a branch that has five brownish leaves. However, when the pupils inspect the picture closely, they realise that two of the five leaves are actually butterflies. The student then questions the four pupils, trying to see whether they can come up with an explanation of the phenomenon. Fifteen feet away, a supervisor aims the camera of a portable videotape recorder at the group and occasionally jots down some notes. The lesson lasts only five minutes, but during this time, two things happen: The pupils discover that butterflies are camouflaged so that they look like leaves, and that this disguise protects the butterflies from their natural enemies. The student has a chance to practise the teaching skill of asking probing questions. As soon as the lesson is over and the pupils have gone, the supervisor and the student discuss the lesson, reviewing the supervisor's notes and viewing parts of the videotaped lesson. Then, after a short break, the entire process is repeated with a different group of four children. The student teacher, the supervisor, and the pupils have been involved in the process of microteaching."

## APPENDIX B

### The Stanford Teaching Skills

from: Allen D W, and Ryan K A, (1969) Microteaching.

1. Stimulus variation
2. Set induction
3. Closure
4. Silence and non-verbal cues
5. Reinforcement of student participation
6. Fluency in asking questions
7. Probing questions
8. Higher-order questions
9. Divergent questions
10. Recognising attending behaviour
11. Illustrating and use of examples
12. Lecturing
13. Planned repetition
14. Completeness of communication

A detailed explanation of these teaching skills can be found in  
Allen D W, (1967) Microteaching: a Description

## APPENDIX C

### The "Minicourse", or Instructional Model

from: Perrott E, (1975) Microteaching

1. The trainee has the opportunity to study a limited number (usually one to three) of specific teaching skills, which centre on a particular area of competency, e.g. he may read about how to ask questions that are likely to provoke a higher cognitive response from pupils, and undertake exercises which are designed to classify the skills involved.

2. The trainee observes examples of the skills. Generally this involves viewing a videotape or film in which each of the skills is described and illustrated. This is followed by a videotape or film which shows a 'model' teacher conducting a lesson in which each skill is demonstrated several times. While observing the skills, the teacher's attention is focused by cues in the form of narrator's comments and captions. This model lesson serves the dual function of providing a clear performance model of how each skill can be used in a teaching context and of helping the trainee to recognise and discriminate among the skills. During the course of the model lesson, the trainee is asked to identify each skill as it occurs and receives prompt feedback on the correctness of his identification.

3. The trainee then has the opportunity to practise and evaluate his use of the skills. Practice takes the form of a ten-minute microteaching session in which five to eight pupils are involved.

4. The microlesson is recorded on video or audiotape and the trainee observes his performance, evaluating his use of the skills with the help of self-evaluation forms, which help the teacher to focus on each skill in turn.

5. The trainee refines his use of the skills through additional practice. He replans the lesson, emphasizing those skills in which his self-evaluation revealed his performance to be most inadequate. Then he reteaches the microlesson with another group of pupils, and evaluates his second recorded performance.

## APPENDIX D

### Lesson Plan

#### Aims

To increase pupils' musical sensitivity by requiring them to sing (in tune), and listen to different sounds at the same time.  
To teach and perform two partner songs, or a two-part song.

#### Objectives

At the end of the lessons, the children will be able to:

- identify what musical activity the teacher is doing, while they sing a well-known song.
- perform a musical activity (clap beat, rhythm, etc), while singing a song.
- sing one song, while sensitively listening to the partner song being sung at the same time.

#### Materials

Simple partner songs (or two-part songs)

- 1 Rocky Mountain/L'il Liza Jane
- 2 Oh Susanna/Year of Jubilo
- 3 Clair de la Lune/Here we go Lobby Loo
- 4 Row your boat/Are you sleeping/3 blind mice
- 5 Tramping/We're on the upward trail
- 6 Tipperary/Pack up your troubles

#### Method

- 1 Sing a well-known song, or fun exercise, as a warm-up.
- 2 Class sings, teacher performs a different musical activity (clap, stamp, sings descant, etc). Ask children "What was I doing?", at the end of the song.
- 3 Same again. Teacher performs a series of musical activities during the song. Children identify correct order
  - 3a Repeat, using volunteers, instruments, etc.
- 4 Introduce new song - sing it well, teaching phrase by phrase if necessary, with word-chart.
- 5 Once well-known, teacher sings an ostinato (from the song) while class sings the song. Ask children to listen carefully to what teacher is doing.
  - 5a If two teachers, sing song and ostinato as a demonstration.
- 6 Teach the ostinato to the class. Ask the class to sing the ostinato while the teacher sings the song.

- 7 Divide the class into two groups – one sings the song while the other sings the ostinato. Then change. Make sure to emphasise good, tuneful singing, asking the children always to listen to the other group, while singing.
- 8 Introduce partner song. Teach as in 4 above.
- 9 Repeat 5 (Class sings partner song, Teacher an ostinato)
  - 9a Repeat 5a, 6 & 7
- 10 When both songs are well-known, divide class into two groups – each group sings own song independently. Then ask one half to sing theirs twice through – the other group joins in with their song on the second time.
- 11 Repeat 8, changing groups.

### Remember

- to insist that the children listen carefully to what the other group is doing at all times.
- to reinforce the children's efforts throughout, praising for a good sound, encouraging for a better response. Don't say something "sounded good", when it clearly didn't. Encourage the children to listen and evaluate.
- to "break up" the lesson with "fun" activities (missing out words, standing to march the beat, etc), but always return to your planned sequence.
- be prepared to repeat parts of your sequence for a musical aim or reason.

APPENDIX E1

Evaluation form used for the main study

The purpose of this assignment is to help you become more aware of your teaching behaviours and for you to be able to critically evaluate your own teaching. Use the following criteria and the 7-point scoring system (1=high, 7=low). Add any additional comments in the space provided.

1 RELEVANT INTRODUCTION WAS GIVEN

Lesson aim explained and introduced with a warm-up.	Short warm-up included and brief reference to aim.	Introduction and warm-up included but not related to the lesson.	Introduction and warm-up not included			
1	2	3	4	5	6	7

.....

2 DISPLAYED WARMTH AND ENTHUSIASM

Was very enthusiastic, and developed a warm atmosphere.	Was generally enthusiastic and warm towards class.	Was indifferent towards activity and class atmosphere.	Was not enthusiastic, and failed to develop a warm atmosphere.			
1	2	3	4	5	6	7

.....

3 TEACHER ENCOURAGED PARTICIPANTS BY GESTURES, POSITIVE STANCE, ETC.

Frequent use of gestures; stance very encouraging.	Moderate use of gestures; stance moderately encouraging.	Some use of gestures; stance non-committal.	Very little use of gestures; stance not encouraging.			
1	2	3	4	5	6	7

.....

4 LESSON WAS WELL PLANNED

Closely followed a planned sequence of activities.	Had a plan, and followed a general sequence.	Had a plan, but didn't follow it.	Had no plan, and followed no sequence.			
1	2	3	4	5	6	7

.....

5 LESSON AIM WAS KEPT IN FOCUS

All activities were related to lesson focus.	Most activities kept aim in focus.	Activities kept aim in focus for some of the lesson	Activities were not related to lesson focus.			
1	2	3	4	5	6	7

.....

6 OBJECTIVES OF LESSON WERE ACHIEVED

Objectives achieved. Activities performed well	Objectives mostly achieved. Activities performed reasonably well.	Objectives only partly achieved. Activities performed quite well	Objectives not achieved. Activities performed poorly.
1	2	3	4
5	6	7	

7 PUPILS WERE ALL INVOLVED

Every child participated all the time.	Most children involved most of the time.	Some children not involved for a lot of the lesson	Many children not involved for most of lesson.
1	2	3	4
5	6	7	

8 VARIETY OF REINFORCEMENT TECHNIQUES (DELAYED, IMMEDIATE, ETC,) USED.

Wide variety of reinforcement techniques.	Some variety in reinforcement techniques.	Limited use of various reinforcement techniques.	Very narrow use of reinforcement techniques used.
1	2	3	4
5	6	7	

9 MUSICAL PERFORMANCE WAS CORRECTED, WHEN NECESSARY.

Children often encouraged to improve their performance.	Class sometimes encouraged to improve their performance.	Class occasionally encouraged to improve their performance.	No encouragement to improve their musical performance.
1	2	3	4
5	6	7	

10 TEACHING METHODS WERE APPROPRIATE

Methods highly appropriate for lesson content.	Methods mostly appropriate for lesson content.	Some methods inappropriate for lesson content.	Methods inappropriate for lesson content.
1	2	3	4
5	6	7	

GENERAL COMMENTS

## APPENDIX E2

As part of the introductory session, the ten items on the evaluation form were elaborated in the following way:

1. "Relevant introduction was given", included introducing self to class, gaining attention, explaining the lesson aim, doing a singing warm-up.
2. "Displayed warmth and enthusiasm" included being comfortable with the subject matter, sharing enthusiasm and involvement, the "total package".
3. "Teacher encouraged participants by gestures, positive stance etc". included, movement around the teaching space, use of body language, eye contact, non-verbal communication
4. "Lesson was well planned" included covering small tasks first going from known to unknown material.
5. "Lesson aim was kept in focus" included following the lesson plan, keeping the aim of the lesson in front of the class.
6. "Objectives of lesson were achieved" included, was the class satisfied at the conclusion? were the activities performed as planned?
7. "Pupils were all involved" included defining the groups for part-singing, ensuring full participation.
8. "Variety of Reinforcement Techniques used" included varying the verbal reinforcers, use of pauses, being positive only when warranted.
9. "Musical performance was corrected, when necessary" included encouraging for a better result.
10. "Teaching methods were appropriate" included changing pace and direction when needed, varying the activity.

APPENDIX F

Questionnaire used in the main study

1. Box Number \_\_\_\_\_
2. School or College (Circle One)
3. The time allowed for teaching was too short/just right/too long. Why?  
\_\_\_\_\_
4. The task set was too difficult/just right/too easy.  
Why?  
\_\_\_\_\_
5. The "classroom" I worked in made the exercise irrelevant/  
of some use/very relevant.  
Why?  
\_\_\_\_\_
6. Write down three things you liked about this Microteaching  
Exercise.  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
7. Write down three things you didn't like, or would like to see  
changed.  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
8. The most useful form of feedback was memory/audio/video?
9. Cross one out. I do not want my audio or video tape heard  
or seen by others.

I give permission for the Music Department to  
Keep and use my audio and video tape.

Signed \_\_\_\_\_

APPENDIX G

Magnitude and direction of trainee total rating change. (College)

Trainee	Memory to Audio	Audio to Video	Memory to Video
C1	-2	+9	+7
C2	-4	0	-5
C3	+2	+2	+4
C4	-6	-1	-8
C5	+4	0	+4
C6	-5	-3	-8
C7	-5	+8	+3
C8	-6	-1	-7
C9	+2	-2	0
C10	-1	+1	0
C11	+4	-4	0
C12	-4	0	-4
C13	+4	+2	+6
C14	+4	+3	+7
Total	54	36	63

Magnitude and direction of trainee total rating change. (School)

Trainee	Memory to Audio	Audio to Video	Memory to Video
S1	+2	0	+2
S2	-4	0	-4
S3	+5	-7	+12
S4	+2	+1	+3
S5	+4	+2	+6
S6	+6	-3	+9
S7	+4	+1	+5
S8	-1	-5	-6
S9	+1	+1	+2
S10	+11	-5	+6
S11	+3	-1	+4
S12	+2	-4	-2
S13	-3	0	-3
S14	0	0	0
Total	48	30	64
TOTAL	102	66	127

APPENDIX H

Direction and magnitude of changes. Wilcoxon.

	Memory to Audio	Audio to Video	Memory to Video
	N T	N T	N T
College	14 37	11 25.5	11 36
School	13 17*	10 12.5	13 23
Total	27 11	21 98.5	24 113

where N = total number of trainees who changed

T = smaller sum of ranks with the same sign

\* = .05 level of significance

APPENDIX I

College Group Rankings

Trainee	Memory	Audio	Video
C1	14	14	13
C2	8=	9	10
C3	3=	2	1
C4	11	12=	13
C5	8=	4=	5
C6	1	4=	7
C7	5	8	3
C8	10	11	11
C9	6=	4	6
C10	12	12=	12
C11	2	1	3
C12	3=	7	7
C13	6=	3	2
C14	13	10	9

School Group Rankings

Trainee	Memory	Audio	Video
S1	4	6	6
S2	5=	12	13
S3	9=	7	1
S4	12	12	12
S5	11	8	7=
S6	14	10	9=
S7	5=	5	2=
S8	13	14	14
S9	9=	10	10=
S10	7=	1	4=
S11	3	2=	4=
S12	2	2=	7=
S13	1	2=	2=
S14	7=	9	10=

APPENDIX J

Inter-rater Reliability

Trainee No	Rater X Total	Rater Y Total	Agreement within + or - 1
S3	49	48	8
C4	53	57	9
S7	48	47	8
S8	38	41	10
C8	50	46	7
S10	46	41	8
C11	38	44	8
C7	55	55	10
C13	46	55	8
S14	46	49	10
Total			86

APPENDIX K

Spearman Rank Correlation by Item

A Spearman Rank Correlation of the figures presented in Table 5.9 reveals a close relationship between the ratings. When the ranks of the ratings are compared, a correlation coefficient confirms that as a rating schedule, the evaluation form from the memory mode, is closely associated with the evaluation form from the Audio mode, and probably affects it, on a number of items.

Spearman Rank Correlations:  
Memory and Audio

	Item									
	1	2	3	4	5	6	7	8	9	10
College	.55	.63	.80	.82	.51	.81	.65	.28	.66	.58
School	.23	.28	.46	.69	.56	.74	.60	.69	.51	.37

Similar coefficients suggest the same sort of association between the Audio and Video evaluation forms.

Spearman Rank Correlations:  
Audio and Video

	Item									
	1	2	3	4	5	6	7	8	9	10
College	.57	.54	.68	.91	.76	.76	.51	.69	.79	.81
School	.24	.34	.56	.67	.63	.39	.19	.39	.87	.86

## APPENDIX L

### Teaching and Questioning Skills used for the Follow-up Study

#### REDIRECTION

Redirection involves asking a question and after the first pupil's response several other pupils are also asked to respond or to add to the original answer. To enable this kind of extended response to occur particular attention must be paid to the formulation of the question.

#### PROMPTING

The skill of prompting is used when, after a teacher has asked a question pupils give a weak, inadequate answer or even an 'I don't know' response. In these circumstances the teacher either gives hints or asks a SERIES of questions which will enable the pupils to arrive at the answer to the question.

#### PROBING

It is important to distinguish clearly between the skill of PROMPTING and the skill of PROBING. In the former which has been explained above additional information is given beyond that supplied in the initial question. A series of steps is created to lead the pupil to a more complete response when the initial question proves to be too difficult. In the skill of Probing NO additional information is supplied. The teacher endeavours to elicit a more complete response from a pupil without supplying any further information. This presupposes a good knowledge of pupils capabilities on the part of the questioner.

## APPENDIX M

### Evaluation Form used for the Follow-up Study

It will be necessary to review/replay your video tape a number of times to complete the various elements of the evaluation. If your tutor is going to review the tape with you it is preferable that you have your own evaluation completed prior to a joint review.

#### REDIRECTION

Your questions may have been planned (P) or unplanned (U). After identifying the category to which the question belongs keep a tally of the number of pupils to whom the question was redirected. This can be done by inserting a dot (.) in the appropriate box to represent each respondent.

QUESTIONS	1	2	3	4	5
Planned (P) or Unplanned (U)					
No. of Pupils involved (.)					
COMMENTS:					

**PROMPTING:** Replay the sequence this time focusing on the number of times you prompted successfully.

PROMPTING    1   2   3   4   5   6   7   8   9   10

WAS THE PROMPTING

Very Adequate       Adequate       Inadequate

HOW MIGHT IT BE IMPROVED?

Summarise the important matters you have learned from this section of the programme.

Identify improvements that you will try to incorporate into subsequent micro-lessons.

## APPENDIX N

### Background to follow-up study

Many institutions in Ireland and Great Britain adopted the original Microteaching concept and have undertaken major developmental research (University of Nottingham, University of Stirling, Ulster Polytechnic). A survey of U.K. colleges where MT was being used in some recognisable form revealed that 40 colleges and universities were using Microteaching (Hargie and Maidment, 1979, p90). Eighteen of these institutions had adopted either the Stanford model or the Minicourse model, adapted for Great Britain by Perrott (1977). (See Appendices A, B, and C.)

The Teachers' College used for the follow-up study was chosen because of its similarity to the College used in the main study. It is situated in a large urban area, and has a roll of about 600 trainees from both urban and rural backgrounds. One difference between the colleges which needs to be mentioned is the length of the B.Ed degree. In New Zealand, the B.Ed degree takes 4 years to complete, a final year of University study being required after a trainee has successfully completed three years at College. In Ireland, the B.Ed is awarded after three years, the degree being conferred by the University College of Dublin. The important implication here is that, assuming both degrees have approximately similar proportions of academic content, then less time is available in the Irish Teachers' College for practical training. A comparison of Teaching Practice figures confirm this - a New Zealand Teachers' College includes a Teaching Practice component of 26 weeks, and an Irish Teachers' College includes a component of 16 weeks.

It is likely therefore that the use of Microteaching has been encouraged in many Colleges in Ireland where Practical Training time is at a premium, because of its economic use of time and resources. Certainly the College

where the follow-up study took place includes a highly structured Microteaching programme in both its first and second years of training. Personal communication with the director of the MT programme at this College revealed that they had adopted Microteaching in its Practical Training programme because it was considered an efficient and economic use of the trainees' and the pupils' time. "It provided a focus on the classroom, good 'neutral' feedback, and bridged the gap between college and school". (Personal communication)

#### MICROTEACHING AT ST. PATRICKS COLLEGE

St Patrick's College, Dublin, has based its Microteaching programme on the accepted cycle of - Study - Observe - Practice - Evaluate - Refine. Trainees are provided with a manual which gives a full explanation of the Microteaching concept, Self Assessment Questionnaires throughout, and a full description and explanation of each of the Teaching and Questioning skills covered by the programme (see Appendix L). These skills have been adopted from the model developed by Perrott (1977).

Demonstration lessons made by Perrott in 1975 were originally used as model lessons to observe in the second phase of the cycle, but these soon became out-of date, and were sufficiently different as to require replacing with more culturally relevant material. New demonstration lessons were recorded, still employing the same clusters of identified skills. Each of these initial phases of the cycle, "Study" and "Observe" takes place under the direction of a tutor, who fully discusses the use of the target skill before any planning takes place.

The Practice phase of the programme involves teaching pupils in "laboratories" at the College. Pupils from the on-campus primary school walk, accompanied by trainees, to the Microteaching Centre, and are formed into small groups of about 7 children, enabling many Microlessons to take

place at the same time. Each group of children is assigned five or six trainees, all of whom remain in the teaching room while their colleagues teach, which means each trainee has the opportunity to observe all microlessons. Trainees therefore spend 45 minutes each week in the practice phase of the Microteaching cycle; preparation and playback take place in their own time.

Playback and evaluation take place immediately after the microlessons, or as soon as possible afterwards. Each of the ten clusters of skills has its own specific evaluation instrument which usually consists of a rating schedule of observed behaviours and an interpretation of those behaviours in written form. The evaluation form used in the follow-up study is that provided by the College for the unit on Redirection and Prompting. (see Appendix M).

Like many Microteaching programmes including the one used in the main study, the programme at St Patricks' College has no specific re-teach or "refine" phase. The Microteaching Manual explains that particular attention should be placed on the skills during teaching practice, and that "refinement is not to be seen as an immediate goal but something that extends well beyond the limits of the programme".

## REFERENCES

- ALLEN D W (1980) Microteaching: A Personal View British Journal of Teacher Education 6,2
- ALLEN D W, RYAN K A (1969) Microteaching Addison-Wesley, Reading, Massachusetts.
- AMERICAN PSYCHOLOGICAL ASSOCIATION (1982) Publication Manual Third Edition.
- BANDURA A (1977) Social Learning Theory Prentice-Hall, Englewood Cliffs, New Jersey.
- BATTERSBY D (1987) In-School Training for Division A Student Teachers Nos 1 2 & 3, Massey University, N.Z.
- BONEY J, RHEA L (1970) A Guide to Student Teaching in Music Prentice-Hall, Englewood Cliffs, New Jersey.
- BORG W R, KELLEY M L, LANGER P, GALL M D, (1970) The Mini-course: A Microteaching Approach to Teacher Education Collier McMillan
- BROWN G (1975) Microteaching: A Programme of Teaching Skills Methuen, London.
- CARPENTER T H (1971) Television and Video Recording in Music Education Educational Technology 11 8.
- CLIFT J C, MALLEY (1974) Bibliography of Microteaching with Selected Annotations Victoria University.

- CLIFT J C, et al (1976) Structure of the Skill Acquisition Phase of a Microteaching Programme British Journal of Educational Psychology 46 2.
- COHEN L, MANION L (1977) A Guide to Teaching Practice Methuen, London.
- COOPER, A (1970) Microteaching: History and Present Status Association of Teacher Educators Research Bulletin 9.
- COPELAND W D (1982) Laboratory Experiences in Teacher Education. In: Mitzel H E (ed) 1982 Encyclopedia of Educational Research, 5th ed. Free Press, N Y.
- DAVIES J K (1977) Microteaching: A Personal Reflection on Involvement. In: McIntyre D I (ed) 1977 Investigations of Microteaching Croom Helm, London.
- DEWEY J (1933) How we think: A restatement of the relation of reflective thinking to the educative process Henry Regnery Co; Chicago.
- DUNKIN M (1987) (Ed) The International Encyclopedia of Teaching and Teacher Education Pergammon Press, Oxford.
- DUNKIN M, BIDDLE B (1974) The Study of Teaching Holt, Rinehart and Winston, USA.
- FULLER F F, BROWN O (1975) Becoming a Teacher. In Ryan K (Ed.), Teacher Education University of Chicago Press
- FULLER F F, MANNING B A (1973) Self-Confrontation Reviewed: A Conceptualisation for Video Playback in Teacher Education Review of Educational Research 43 4.

- GILMORE S (1977) Microteaching and the Professional Education of Teachers of English. In: McIntyre D I (Ed.) 1977 Investigations of Microteaching Croom Helm, London.
- GILMORE S (1977) The Effects of Positive and Negative Models on Student-Teachers' Questioning Behaviours. In: McIntyre D I (Ed) 1977 Investigations of Micro-teaching Croom Helm, London.
- GREGORY T B (1972) Encounters with Teaching Prentice-Hall, Englewood Cliffs, New Jersey.
- GRIFFITHS R (1976) Preparing tutors for microteaching supervision Ed. Media Int. 1:11-15.
- HARGIE O, MAIDMENT P (1979) Microteaching in Perspective Blackstaff Press, Ulster Polytechnic
- HORNER V (1965) Music Education: the Background of Research and Opinion ACER 1965
- ILLINGWORTH B L (1971) Self- and Supervisor-Feedback in Microteaching by Pre-Service Teachers Ph.D. Dissertation, Purdue University.
- INTERNATIONAL MUSIC EDUCATION (1982) Tradition and Change in Music Education ISME, Bristol, England.
- JOHNSON W D, PANCRAZIO S B (1971) The Effectiveness of Three Microteaching Environments in Preparing Undergraduates for Student Teaching. Paper presented at American Educational Research Association. ERIC ED 029 823

- JOHNSTONE R (1977) Microteaching and Modern Languages. In:  
 McIntyre D I (Ed.) (1977) Investigations of Microteaching  
 Croom Helm, London.
- JOYCE B R (1980) Learning How to Learn Theory into Practice 19 1
- JOYCE B R (1988) Training Research and Preservice Teacher  
 Education: A Reconsideration Journal of Teacher Education,  
 34 5.
- KATTERNS R (1977) Microteaching - A Sensitisation Model  
 Unpublished Doctoral Thesis, University of Waikato, N Z
- KUHN W (1968) Holding a Monitor up to Life: Microteaching. Music  
 Educators Journal, December.
- LAURENCE I (1978) Composers and the Nature of Music Education  
 Scholar Press, London.
- LEITH G O M (1984) The Influence of Personality on Learning to  
 Teach: effects and delayed effects of microteaching.  
Educational Review 34 3.
- LEONARD B C, GIES F J, PADEN (1971) The Effect of selected media  
 feedback upon the interactive behaviour of student teachers.  
Journal of Ed Research 64 10.
- LEVIS D (1973) A progress Report of the Study to Investigate the  
 Effects of Alternative Techniques to Practice Teaching on  
 the Development of Teaching Skills by Student Teachers.  
 Sydney: School of Education, Macquarie University.
- LEVIS D S (1987) Microteaching: Feedback. In: Dunkin M J (ed) 1987  
The International Encyclopedia of Teaching and Teacher  
 Education Pergamon Press, Oxford.

- LLOYD J M (1977) Microteaching and the Preparation of History Teachers: Some Reflections. In: McIntyre D I (1977) Investigations of Microteaching Croom Helm, London.
- McALEESE R (1976) A note on the free-wheeling effect in non-supervised microteaching students Research Intelligence 2 1
- MacDONALD F J, ALLEN D W (1967) Training Effects of Feedback and Modelling Procedures on Teaching Performance School of Education, Stanford University
- MacDONALD F J (1973) Behaviour Modification in Teacher Education. In: Thoresen C E (ed) 1973 Behaviour Modification in Education 72nd Yearbook of the National Society for the Study of Education, Part 1. NSSE, Chicago, Illinois
- McFARLAND D J (1981) Feedback Mechanisms in Animal Behaviour Academic Press, London.
- McGARVEY B, SWALLOW D (1986) Microteaching in Teacher Education and Training Crom Helm, London.
- McINTYRE D I, MacLEOD G R, GRIFFITHS R (Eds) (1977) Investigations of Microteaching Croom Helm, London.
- MacLEOD G R (1987) Microteaching: Modelling and Effectiveness. In: Dunkin M J (ed) 1987 The International Encyclopedia of Teaching and Teacher Education Pergamon Press, Oxford.
- McQUERRY L H (1968) Holding a Monitor up to Life: Microrehearsal Music Educator Journal December.
- MOORE B C J (1982) An Introduction to the Psychology of Hearing Academic Press, London.

- NELSON J K (1980) A Comparison of differential feedback procedures on music teaching skills of prospective elementary and special education teachers, Doctoral Thesis, University of Texas at Austin. Publication No 8021488.
- PERLBERG A (1987) Microteaching: Conceptual and Theoretical Bases. In: Dunkin M J (Ed) 1987 The International Encyclopedia of Teaching And Teacher Education Pergammon Press, Oxford.
- PERROT E (1977) Microteaching in higher education: research development and practice, Society for Research into Higher Education, Guildford.
- PERROT E (1987) Minicourses. In: Dunkin M J (ed) 1987 The International Encyclopedia of Teaching and Teacher Education Pergammon Press, Oxford.
- ROSENSHINE B (1971) Teaching Behaviours and Student Achievement NFER, Slough, England.
- RYAN K A (1974) The Use of Feedback from Students in the Pre-service Training of Teachers Paper presented at the Annual Meeting of the American Educational Research Association, Chicago, Illinois, April, 1974.
- SCHON D A (1983) The Reflective Practitioner. How Professionals Think in Action Basic Books, New York.
- SCHON D A (1987) Educating the Reflective Practitioner Jossey-Bass, California.
- SHIVELY J E, van MONDFRANS A P, & REED C L (1970) Effect of Mode of Feedback in Microteaching Paper presented at AERA conference ED 037 391.

- SIEGEL S (1956) Nonparametric Statistics for the Behavioural Sciences McGraw-Hill, NY.
- SMALL C (1977) Music-Society-Education John Calder, London.
- STANTON H E (1978) Self-Concept change through a microteaching experience British Journal of Teacher Education 4 2.
- STONES B (1984) Supervision in Teacher Education. A Counselling and Pedagogical Approach Methuen, London.
- SWANWICK K (1979) A Basis for Music Education NFER Publishing Company, Windsor.
- TITTLE C K (1974) Student Teaching: Attitude and Research Bases for Change in School and University The Scarecrow Press, Metuchen, New Jersey.
- TROTT A J (1977) Selected Microteaching Papers Kogan Page, London.
- TURNEY C (Ed.) (1973) Sydney Micro Skills Sydney University Press.
- TURNEY C (Ed.) (1982) The Practicum in Teacher Education Sydney University Press.
- TURNEY C, CLIFT J C, DUNKIN M J, TRAILL R D (1973) Microteaching: Research, Theory and Practice Sydney University Press.
- Van MANEN (1977) Linking ways of knowing with ways of being practical Curriculum Inquiry Vol 6
- WRAGG E C (1971) The Influence of Feedback on Teachers' Performance Educational Research June 1971.

WRAGG E C (1974) Teaching Teaching David & Charles, Newton  
Abbot, Devon.

WRAGG E C (1982) A Review of Research in Teacher Education  
Nelson.

WRAGG E C (Ed.) (1984) Classroom Teaching Skills Croom Helm,  
London.

ZEICHNER K (1982) Reflective Teaching and Field-Based Experience  
in Teacher Education Interchange 12 4