

MICROTEACHING: A BILINGUAL APPROACH

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Introduction

Since its introduction in the 1960s by Allen and others at Stanford University, micro-teaching has shown itself to be an effective technique for the training of teachers in classroom skills. Although many variations of the original model now exist, the basic approach involves breaking down the complex activity of teaching into a number of specific skills. The teacher then practises these skills in short lessons (5-15 minutes) with small groups of pupils, after which the lessons are evaluated, usually from videorecordings. This reduction in the complexity of teaching has a number of important advantages. For example, it enables teachers to consciously develop their teaching technique in specifically defined areas. It also allows a more direct means of judging whether desired improvements are being made. As Borg et al (1970) have noted, including a comment like "your lesson only contained three higher-order cognitive questions" is more likely to help a teacher include a skill into his teaching performance than a rather vague exhortation such as "you must improve your questioning technique!" Using experience such as this gained by previous workers, the present study is an attempt to apply the microteaching model to the situation as it exists in Hong Kong.

Secondary school teaching in Hong Kong,

which covers the age range 12-18 years, has two particular characteristics that need to be considered when introducing a programme of microteaching. The first of these involves bilingualism. The junior three years of secondary education is conducted mainly through the medium of the Chinese language, while the senior three or four years can be taught through Chinese or English depending on the nature of the school. Student teachers must therefore be trained to teach in both languages. For this reason, the present study incorporates a bilingual approach, allowing microteaching lessons to be practised in both Chinese and in English. This contrasts with overseas work in which investigations are normally carried out in a monolingual setting.

The second characteristic centres around the problem of pupil participation. Traditional Chinese acceptance of the teacher as an authority, together with difficulties in expression when lessons are conducted in a foreign language (English), have tended to discourage pupil participation in classroom lessons. Teachers, many of whom have been untrained, have unfortunately often reinforced this situation. Finding class control easier, and with the temptation to merely dispense knowledge, many teachers have classrooms full of passive pupils. The situation is changing slowly and nowadays it is possible to find pupils who actively participate in lessons. Because a group of passive pupils

* The author wishes to express his thanks to Mr. LEUNG Chung Keung for analysing and scoring the pre-course and post-course lessons as described in this article. His assistance greatly facilitated the work in this study.

could have a different effect on the teaching performance in microteaching lessons as compared with more active pupils, this study includes both types of pupils in the programme.

The present study is an attempt to provide a microteaching programme for student teachers in a bilingual setting, using both active and passive pupils. The effects of microteaching, language, and type of pupil on teaching performance are investigated. The overall objectives of the study are to:

- a) provide student teachers with a programme of microteaching, with particular emphasis on the technique of questioning giving practice in the medium of Chinese as well as in English, with groups of active and passive pupils.
- b) reduce the time spent on teacher talk, to increase the time for pupil participation, and to improve the technique of questioning through this microteaching programme.
- c) investigate the effects of language and type of pupil on time spent in teacher talk, time for pupil participation, and the technique of questioning.

Design of the Microteaching Programme

The study was conducted in the context of the first term of the School of Education Diploma-in-Education programme. The student teachers involved were those enrolled in a course for the teaching of chemistry. Microteaching is a required course and covers several skill areas including the Establishment of Set, Closure, Clarity of Explanation, and Questioning. In contrast to the practice of previous years, the actual microteaching lessons were taught to pupils in local secondary schools rather than to fellow student teachers. In addition, each microteaching session set out to improve a limited number of specific skills (3-4) which were capable of being evaluated by the student teachers themselves. The area and skills which made up the microteaching programme are stated below:

1. Establishing Set:
Objective: To induce a pupil to attend and learn
Skills: 1. Gain attention quickly
2. Select an introduction that matches the lesson objectives
3. Stimulate pupil interest and involvement
4. Make clear to pupils the purpose of the lesson
2. Closure:
Objective: To direct attention to the completion of a specific task
Skills: 1. Focus attention on the major points that pupils learnt
2. Consolidate the learning in a way clear to the pupils
3. Reinforce pupils's interest/or create a sense of achievement
3. Clarity of Explanation:
Objective: To give understanding of an abstract idea
Skills: 1. Choose an appropriate lead-in to the explanation
2. Cover just the essential features needed for pupils to understand the idea
3. Select analogies, concrete ideas and examples relevant to the explanation
4. Use verbal and non-verbal emphases for important parts of the explanation
[5. Match the spoken word to a visual aid, if used.]
4. Questioning. Twelve skills are practised. These are identical to those developed by the International Microteaching Research Unit of the University of Lancaster. A list of these skills can be seen in a previous Chinese University Education Journal, Vol. 8 No. 2, pp. 51-52.

The basis of the microteaching programme is a cycle of activities which are described below. Notice that self-evaluation of lessons by student teachers has been included. Various workers have shown that self-evaluation has a greater effect on teaching behaviour and leads to more

changes than evaluation and comments by a tutor.

1. Background notes of the skills are studied by the student teachers. These relate the skills to the teaching of chemistry.
2. Models lessons, in English, are observed to illustrate the skills in each area that are in a particular session. These lessons are simultaneously recorded on videotape for playback, discussion, and collective evaluation using prepared forms.
3. The student teachers plan lessons to incorporate these skills. This is done in their own time. Topics used are ones which do not overlap with those the school pupils would be doing at the same time. Each lesson is of

about 10 minutes duration.

4. The lessons are taught to the school pupils. In order to achieve objective(a) on page 46, half the lessons are given in Chinese, half in English; half are taught to a group of passive pupils, half to active pupils. All the lessons are recorded on videotape.
5. Students playback the recordings and evaluate their lessons using the self-evaluation forms provided.

Ideally, opportunity should be given for lessons to be revised then retaught to another group of pupils. Due to the time factor, this was only possible twice-once for Set and Closure skills, and once for Clarity of Explanation skills.

Figure 1: An outline of the microteaching programme for one group of student teachers showing the sessions taught, the types of pupils taught and the medium of instruction of the lessons. For the second group of student teachers, the medium of instruction is reversed.

Week	Session	Time (min)	Active Pupils	Passive Pupils
1	1. Pre-course lesson	20	English	
	2. Pre-course lesson	20		Chinese
2	3. Set and Closure	10	Chinese	
	4. Set and Closure (repeat)	10		English
3	5. Questioning '1'	10	English	
	6. Questioning '2'	10		Chinese
4	7. Questioning '3'	10	Chinese	
	8. Questioning '4'	10		English
5	9. Clarity of Explanation	10	English	
	10. Clarity of Explanation (repeat)	10		Chinese
6	11. Post-course lesson	20	English	
	12. Post-course lesson	20		Chinese

Figure 1 shows how the six-week study was organized and how the microteaching fitted into this. The microteaching programme lasted four weeks (Weeks 2-5) with two teaching sessions per week. About 10 hours of work per student was needed, excluding time for private study and lesson preparation. On completion of the programme, the student teachers went out to secondary schools for four weeks of full-time teaching practice, during which the teaching skills learnt could be practised to classes of about 40 pupils in normal length lessons.

Research Method

1) Experimental Design

In order to measure the effects of the

microteaching programme, it is necessary to compare lessons given by the student teachers before the course to lessons given immediately after completing the course. In addition, the objectives outlined on page 46 call for an investigation of the effects of two variables - language and pupil activity - on teaching performance. To obtain a balanced design, the student teachers are divided into two groups. One group teaches a twenty-minute pre-course lesson to active pupils in the medium of English and another lesson to passive pupils in Chinese. These lessons are then repeated in the post-course lessons. The second group of student teachers gives lessons in Chinese to passive pupils and in English to active pupils. The design is illustrated in Figure 2 in which X and Y represent the two groups of student teachers.

Figure 2: A Schematic View of the Experimental Design for Pre-Course and Post-Course Lessons

Language Medium \ Type of Pupil	Active	Passive
English	X	Y
Chinese	Y	X

The complete programme for the study is shown in Figure 1 for one of the two groups of student teachers (Group X). For the other group (Group Y), the medium of instruction is reversed in each session.

2) Subjects

In accordance with the above design, the seven student teachers in chemistry were assigned at random to one of the two groups, X and Y. To obtain the four groups of pupils needed for the lessons, volunteers were sought from two local secondary schools. All these pupils were of approximately the same age, all were studying chemistry, and each had been classified

as 'active' or 'passive' by their chemistry teachers. Two groups of six passive pupils were selected at random from one school, while two groups of six active pupils were selected from the other schools.

3) Measures of Performance

All the pre-course and post-course lessons were recorded on videotape. Each lesson was assessed according to the following four measures of performance:

1. The percentage of time taken in teacher talk. This included such things as explanations, instructions, asking questions and making comments.

2. The percentage of time used for pupil participation. This included verbal participation such as the answering of questions and the volunteering of information.
3. The number of questions asked.
4. The percentage of questions requiring higher-order thought processes.

The first two measures reflect the overall objectives of the study while the other two are used as a measure of the effectiveness of the questioning technique.*

4. Rating Procedures

Assessment of the videotaped lessons for the above measures was carried out by a research assistant trained for this purpose. The tapes for the pre-course and post-course lessons were randomly ordered. For measures of teacher talk and pupil participation, scoring was done according to the method suggested by Brown (1975). In this method, coding occurred at three-second intervals, with the activity happening in that interval being noted on a coding chart. Brown found that intervals of two seconds or less are too short for most people, while for intervals longer than three seconds so many things can happen that it is difficult for an observer to decide which activity to record.

As a check on the validity of these ratings, the lessons were also scored by the student teachers themselves as part of their microteaching course work. Correlations between scores obtained by the research assistant and by the student teachers were high. For percentage of time for teacher talk, the correlation coefficient was 0.92; for percentage of time for pupil participation it was 0.91 ($n = 24$ lessons).

The tapes were played again to obtain the total numbers of questions and the numbers of higher-order questions asked. As these were easy to obtain, it was felt that no check was necessary.

5) Questionnaire Measures

To investigate student teachers' reaction to the microteaching course, a self-coding questionnaire was given at the end of the

programme. To encourage frank responses, the questionnaires were answered anonymously. Data was obtained in five areas:

1. Evaluation of the course.
2. The usefulness of the skills for teaching in the medium of Chinese and English.
3. Evaluation of the components of the course.
4. Transfer to the normal classroom situation.

Areas 1-3 were completed immediately following the course. Data from area 4 was collected after the four-week teaching practice in schools.

Hypotheses

The hypotheses are stated in a general form and apply to the student teachers who followed the specified course in microteaching.

1. For lessons taught in the medium of either Chinese or English to pupils classified as either active or passive, there were expected to be:
 - (a) significant *decreases* from pre-course lessons to post-course lessons in the mean percentage of time spent on teacher talk,
 - (b) significant *increases* from pre-course lessons in the mean percentage of time spent in pupil participation, numbers of questions asked, and the percentage of higher-order questions.
2. The mean differences in scores from the pre-course lessons to post-course lessons in (i) percentage of time spent on teacher talk, (ii) percentage of time spent in pupil participation, (iii) numbers of questions asked, and (iv) percentage of higher-order questions, will be significantly different for:
 - (a) lessons taught in Chinese compared with lessons taught in English,
 - (b) lessons taught to active pupils compared with lessons taught to passive pupils.

* In a later article, the results of an analysis of each of the twelve questioning skills practised will be discussed.

Possible interactive effects between medium of instruction and type of pupil were also sought.

Results and Discussion

1. Teaching Performance before and after the Microteaching Course

Analysis centred on the mean differences between the pre-course lessons and the post-course lessons for each measure. Table 1 shows a summary of the outcomes of the analysis of the sixteen areas. For each area a 't' test for differences between correlated pairs of means was computed, being one-tailed because of the directional form of the hypothesis.

Table 1: Differences in selected measures between pre-course lessons and post-course lessons after completing the microteaching course, for lessons in English and Chinese, with active and passive pupils.

(a) Percentage of time for teacher talk

Medium of instruction	Type of pupil	Mean Scores			t
		Pre-course lesson	Post-course lesson	Decrease	
English	Active	79.7	50.6	29.1	4.95 *
	Passive	77.7	71.0	6.7	0.88
Chinese	Active	77.0	68.0	9.0	2.97 *
	Passive	81.4	52.3	29.1	25.11 ***

(b) Percentage of time in pupil participation

Medium of instruction	Type of pupil	Mean Scores			t
		Pre-course lesson	Post-course lesson	Increase	
English	Active	2.3	18.7	16.4	2.99 *
	Passive	1.3	6.7	5.4	7.95 **
Chinese	Active	3.0	11.0	8.0	8.00 **
	Passive	1.3	11.6	10.3	3.32 **

(c) Number of questions asked

Medium of instruction	Type of pupil	Mean Scores			t
		Pre-course lesson	Post-course lesson	Increase	
English	Active	12.0	20.7	8.7	1.55
	Passive	4.3	22.7	18.4	4.43 *
Chinese	Active	14.3	24.0	9.7	2.99 *
	Passive	5.7	21.3	15.6	3.45 *

(d) Percentage of higher-order questions

Medium of instruction	Type of pupil	Mean Scores			t
		Pre-course lesson	Post-course lesson	Increase	
English	Active	3.0	55.7	52.7	3.65 *
	Passive	5.7	49.3	43.6	2.92 *
Chinese	Active	9.3	72.3	63.0	5.25 *
	Passive	3.0	45.3	42.3	18.34 **

*p < 0.05 **p < 0.01 ***p < 0.005

The mean differences show improvement on every measure for all of the tests. These are significant except for two, and this is probably due to the smallness of the sample as the actual improvements are rather large. The mean percentage of teacher talk in all the pre-course lessons is almost the same. This reflects the almost universal tendency of untrained teachers to lecture their pupils. The pre-course lessons also show that passive pupils are asked fewer questions. While this would be expected, it is interesting to see that for all post-course lessons, similar numbers of questions are asked. The differences between these post-course lesson means are not significant ($F = 0.31$; $df = 3.8$; $p > 0.05$). Teacher training

through microteaching encourages the asking of questions to passive as well as active pupils.

These results confirm previous research that a programme of microteaching is an effective method for improving teaching performance. It is effective in improving the quality of teaching through the medium of Chinese as well as English, to passive as well as to active pupils.

2. The Effects of language medium and type of pupil on teaching performance before and after microteaching

Using the data in Table 1, a two-factor analysis of variance (language x type of pupil) was carried out to determine the effects of language medium and type of pupil on the improve-

ments in teaching performance from pre-course to post-course lessons in the four measures. Statistical significance was determined at the 0.05 level or less.

(a) Language medium (Table 2)

Although microteaching improves teaching performance, there was no evidence of

significant difference on any of the four measures of teaching performance between the improvements shown by teaching in Chinese and those by teaching in English. The actual differences are also small indicating that they are unlikely to be significant even with larger groups of student teachers.

Table 2: The effect of the language variable for differences between pre-course lessons and post-course lessons in selected measures.

Measure	Mean improvements			F
	Chinese	English	Difference	
Decrease in percentage of time in for teacher talk	19.0	17.9	- 1.1	0.06
Increase in percentage of time in pupil participation	9.2	10.9	1.2	0.20
Increase in number of questions	12.7	13.6	0.9	0.03
Increase in percentage of higher - order questions	52.7	48.2	- 4.5	0.13

(b) Type of pupil (Table 3)

For the measures of teacher talk, pupil participation and number of questions, there is no significant difference for the mean increases in scores from pre-course to post-course lessons between the lessons taught to active pupils and those taught

to passive pupils. However, for numbers of questions asked, the difference is sufficiently great to suggest that larger groups of student teachers might produce statistically significant results. Further study is needed to verify this.

Table 3: The effect of the type of pupil for differences between pre-course lessons and post-course lessons in selected measures.

Measure	Mean improvements			F
	Passive pupils	Active pupils	Difference	
Decrease in percentage of time for teacher talk	17.9	19.1	1.2	0.06
Increase in percentage of time in pupil participation	7.9	12.2	4.3	1.36
Increase in number of questions	17.0	9.2	- 7.8	3.79
Increase in percentage of higher - order questions	43.0	57.9	14.9	5.43 *

*p < 0.05

For the percentage of higher-order questions asked, significantly greater improvements occur with the active pupils than with the passive pupils. These differences are also reflected in the larger percentage of higher-order questions asked of active pupils in the post-course lessons (Table 1). As noted earlier, however, the total number of questions asked of all pupils (active and passive) in the post-course lessons is almost identical. This would indicate that while trained teachers are capable of putting similar numbers of questions to all pupils, the relatively larger number of *higher-order* questions asked of active pupils means that a relatively larger number of *lower-order* questions are asked of passive pupils.

(c) Interaction of variables (Table 1 and Table 4)

Table 1 shows the improvements brought

about by microteaching in the four measures.

There is evidence of significant interaction between the variables of language of instruction and type of pupil on two of the four measures. For the measure of teacher talk, the microteaching course gives the greatest improvement for lessons in Chinese to passive pupils (29.1% improvement). For the corresponding lessons in English however, the pattern is reversed - the teacher talks less to classes of active pupils (also a 29.1% improvement). For the other significant measure - pupil participation - the largest gains are made with active pupils taught in the medium of English (16.4% improvement). For the corresponding lessons in the medium of Chinese similar gains are made with both types of pupils.

Table 4: The effect of interaction between language and type of pupil for differences between pre-course lessons and post-course lessons in the measures shown in Table 1.

Measure	F
Decrease in percentage of time for teacher talk	18.84 **
Increase in percentage of time in pupil participation	5.66 *
Increase in number of questions	0.15
Increase in percentage of higher-order questions	0.19

*p < 0.05 **p < 0.01

These results thus indicate that for classes taught in *Chinese*, training teachers through a programme of microteaching has the effect of improving the time spent in pupil participation for passive pupils, bringing it up to the level of participation obtained with active pupils. The passive pupils are more reluctant to answer higher-order questions so the teacher compensates by asking more lower-order questions which are usually shorter and require simpler responses. With active pupils, teachers will ask higher-order questions possibly because

of the willingness of these pupils to attempt answers and their ability to handle the medium of instruction. Paradoxically there is relatively more teacher talk with active pupils than with passive pupils. Perhaps the willingness of pupils to answer questions requiring more thought increases the enthusiasm of the teacher who therefore joins in the discussion more.

For classes taught *English*, the study shows that passive pupils tend to remain passive relative to the active pupils, though teacher training through microteaching does reduce

their passivity. There is still too much teacher talk in these classes, and too few higher-order questions asked. Part of the reason can doubtless be found in a reluctance to speak in English because of their lack of fluency in the language. To compensate, teachers talk more themselves, and to increase pupil participation ask more lower-order questions. However, a reluctance to answer rather than a language problem itself is probably the key factor because we saw above that passive pupils taught in the medium of Chinese are also less willing to respond to higher-order questions. On the other hand, once trained, teachers of active pupils using the medium of English tend to give performances regarded as desirable, i.e. a lot of pupil participation, many higher-order questions, and less overall teacher talk! Whether this is

true or merely an aberration of this particular study could only be answered by further research.

Reactions to the Course

1. Evaluation of the Course

When the student teachers were asked for their reactions after completing the course, they were generally enthusiastic, found the course interesting and felt that it helped them to appreciate the difficulties involved in effective teaching. The course gave them confidence to teach the skills through the medium of English as well as through Chinese. Although free to choose topics for their lessons, the majority expressed difficulty in selecting suitable topics to teach. The responses to this part of the questionnaire are summarized in Figure 3.

Figure 3: Student teachers' reactions to the course showing the percentages of responses.

	Yes	Neutral	No
1. Did you enjoy the course?	72	28	
2. Do you think the course was valuable in your training to be a teacher?	86	14	
3. Did you ever talk about the course in a positive way to others not doing the course?	72	14	14
4. Does the course make you aware of the difficulties faced in communicating ideas to pupils?	86	14	
5. Do you now have a greater confidence in your ability to communicate ideas to pupils?	57	43	
6. Did you find the model lessons for the skills useful?	72	28	
7. Were you able to improve your skills through watching videotapes of your lessons and using the self-evaluation forms?	57	29	14
8. Was it generally difficult to select topics to teach?	57	29	14
9. Was it useful to teach lessons in both English and Chinese ?	57	43	

N = 7

2. The usefulness of the skills

The student teachers were asked to assess each skill as to whether they found it useful for microteaching lessons in Chinese, in English, or in both languages. For the Set and Closure skills almost all agreed that the skills were helpful for teaching in both languages. Similar results were obtained for the questioning skills. However, about 25 percent thought that the skills 'obtaining longer pupil responses', 'asking higher-order questions', and 'avoiding repetition of pupil answers' helped them more when teach-

ing in the medium of Chinese.

3. The components of the microteaching cycle

The questionnaire required the student teachers to indicate which parts of the course were valuable and important to retain. Most components were graded as valuable though about 28 percent thought the inclusion of videotapes and self-evaluation of lessons was not so valuable. The responses to this part of the questionnaire are shown in Figure 4.

Figure 4: Student teachers' evaluation of the course components as a percentage rating.

	Valuable
1. The background notes for the skills.	100
2. Reading and preparation of lessons in your own time.	86
3. The model lessons.	86
4. The actual teaching of microlessons to school pupils.	100
5. Viewing your lesson on videotape.	72
6. Self-evaluation of the lessons.	72
7. The teaching of trial (pre-course) and final (post-course) lessons.	86

N = 7

4. Transfer to the normal classroom situation

During the four weeks of teaching practice in schools that followed the microteaching course, just over half the student teachers taught some lessons in the medium of Chinese and some in English. The remainder taught exclusively in the medium of Chinese. All practised the microteaching skills they had learnt but nearly 50 percent reported that teaching was more difficult than it had been with the small microteaching groups. Most difficulties were experienced in the technique of questioning. The particular skills found difficult to transfer were 'avoiding repetition of questions' (72 percent) and avoiding repetition of pupil answers'

(57 percent). Questioning skills found easy to transfer included 'pausing before naming a pupil' (72 percent), 'asking non-volunteers to answer questions' (72 percent), and 'reinforcing correct answers' (57 percent).

Conclusions

This study confirms the effectiveness of a microteaching programme as a means of developing specific teaching skills. An analysis of videotaped lessons before and after the microteaching course showed a consistent reduction in the amount of teacher talk, and an increase in pupil participation, numbers

of questions asked, and percentage of higher-order questions asked. Improvements occurred for teaching done in the medium of Chinese as well as English, to pupils classified as either active or passive. No differences in performance were obtained for lessons taught in Chinese compared with those taught in English. Differences between types of pupils were shown to exist in the area of questioning technique. The quality of the questions asked improved much more with active pupils than with passive pupils. The course was well received by the student teachers and there was a willingness to use the skills in the real classroom setting.

In future microteaching courses several modifications will be made to the programme outlined in this article. Firstly, the tutor will select suitable topics for the microlessons as many of the student teachers felt that this was difficult to do themselves. Secondly, an even greater emphasis will be placed on the technique of questioning, particularly in regard to the asking of higher-order questions of passive pupils and the use of prompting and probing to help reluctant pupils to respond. Although some student teachers had reservations about self-evaluation of videotaped microlessons, this practice will continue as it still turned out to be more effective than an evaluation of lessons by the course tutor.

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