



MEP INTERIM REPORT

Evaluation of Cohort 1, Year 1

In September 1996, 95 schools (comprehensive, grant maintained and independent) in England and Wales took part in the first year of *MEP* with their Y10 cohort, involving about 500 teachers and 12 000 pupils. This report presents the main findings of the first year's evaluation, although further detailed analysis on the correlation between various factors will be undertaken with both this data and the data from the GCSE results for Cohort 1, enabling a more comprehensive evaluation to be undertaken and published later in the year.

This report focuses on the four main aspects of the evaluation:

1. value added data, showing progress in Y10,
2. analysis of the pupil questionnaires, given at the end of Y10,
3. analysis of the teacher questionnaires, given at the end of Y10,
4. observational and interview data obtained by CIMT.

1. Value Added Data

We encouraged all project schools to use Kassel Project tests at the beginning of Y10 and Y11 so that:

- (i) we would have a measure of pupil progress in Y10,
- (ii) we could compare this progress with the 'standardised' progress made by Y10 pupils in the Kassel Project.

Currently, we have received data from only about one third of our schools, although we do hope that this proportion will be greater for Cohort 2.

The data, though limited, are nevertheless very interesting. We computed each pupil's gain/loss over Y10 compared with Kassel Project pupils of similar ability and attainment at the start of Y10. The class average gain/loss and the school's overall gain/loss were also computed. The *School Performance Indicators* (PI's) are listed in **Appendix 1**. On the whole, they are positive and give us confidence that in most schools the project is working well and enhancing learning. The PI's were based only on the *Potential* and *Number* test results and as our questionnaire responses indicate considerable gains in algebra, it seems likely that the PI's are an underestimate of the total gains made during 1996/7.

It should be noted that even in the schools with an overall negative PI, there were classes which had positive PI's.

The schools with significant positive (or negative) PI's were given priority on our visits and our findings are reported in the final section.

2. Pupil Questionnaires

The results so far are summarised in **Appendix 2**, although not all the data has been inputted yet. However, the sample size is now large enough to make major changes unlikely.

The responses to the final questions gave us both satisfaction and hope for the future:

E2 Has *MEP* succeeded in raising:

- | | | | |
|----|--|---------|--------|
| a) | your level of understanding of basic concepts? | YES 84% | NO 16% |
| b) | your own expectations of what you can do? | YES 75% | NO 25% |

We were interested to see that maths lessons had actually changed (see **A1**), although we are concerned about the 6% who responded *Not at all*. There were also positive responses to the *MEP* whole-class teaching style (**A2**) and the responses to working at the board did show that most teachers were putting this recommendation at least partially into practice. There were, though, 15% of pupils who *Never* worked at the board.

The resources seem to have been a great success; for example in **C1e**, 38% of pupils thought that the Pupil Texts were *much better* than their previous books and another 37% *a little better*. They were particularly keen on the:

- worked examples
- clear explanations
- clear layout and setting out of working

in the *Pupil Texts* but did not like the uncertainty of not knowing whether the answer given at the back of the book was correct! They were also keen to have worked examples in the *Practice Books*.

It was interesting to see some pupils *regularly* took the *Pupil Text* home (about 30% - **C1b**) whereas a significant number (40%) *Never* did. This is when correlation with progress will give us some indication about the best use of the resources.

In the open questions, algebra was by far the most popular response to the question, *Which part of your maths has improved most?* (**A10**) – but note that it was also the most popular response to the following question, *Which part of your maths still needs improving?* (**A11**).

We were also pleased to note that most pupils have been working harder (**D1**) and gaining confidence in their mathematical ability (**D5**), although 69% thought that they could do better (**D6**) by working *harder, concentrating more, going to more lessons* and even *getting a different brain!*

One other aspect which deserves a mention is what happens when pupils are absent from a lesson (**A12**). Note that on average each pupil missed more than 5 lessons during the year and the majority responded with *copied from a friend's book* (34%), *caught up at home* (11%) or *asked a classmate* (9%), while only 10% *asked the teacher*. These responses do not entirely tie up with the teachers' responses to a similar question (see *Section 3*).

Overall, the responses were encouraging and most pupils seem to have a more positive attitude towards mathematics.

3. Teacher Questionnaire

Again, the evaluation was generally very positive. For example, the response to the last question:

D5 In your opinion, has *MEP* succeeded in raising:

- | | | | |
|----|---|---------|--------|
| a) | your own expectations of what your pupils can do? | YES 69% | NO 31% |
| b) | your pupils' level of | | |
| | (i) attainment | YES 84% | NO 20% |
| | (ii) understanding? | YES 82% | NO 18% |

does give us confidence that in most schools *MEP* is working well.

It was interesting to note that all but 6% of teachers thought that their teaching style had changed (indeed 30% by *a lot!*) (A1), although we would have liked to have seen even more mental work and more regular use made of pupils working at the board. We were disappointed that, as yet, sharing experiences was not taking place (over 50% had never been seen teaching or had the opportunity to see others teach). We hope that this will change in the future!

We also note that many teachers felt that there was either a lack of time to use the resources beyond the *Pupil Texts* and *Practice Books* or the resources were too difficult for their particular class. The *Revision Tests* also caused problems, with many teachers adapting or 'picking and choosing' questions rather than using the complete test.

Coming back to the problem of pupil absence, the main response to the question, *If pupils were absent, what help were they given to catch up?* were:

A8	Help given during breaks/lunchtimes	16%
	Individual help given	16%
	Pupil copied from friend's notes.	10%

and these responses were somewhat at odds with the pupils' responses, which seemed to imply that pupils relied mainly on help from classmates. This is a vital issue, not only because maths is a very linear subject but also because the *MEP* teaching philosophy makes the teacher's role even more crucial.

Overall, though, the responses were encouraging and we are pleased that, despite some of the problems of implementation (e.g. too much to cover in the time, end of unit tests too difficult, etc.) a positive view dominated.

4. Observations and Interviews

Regretfully, one aspect of the evaluation, that of observing and discussing issues with pupils and staff, becomes of necessity a lower priority when deadlines for resources have to be met! However, we did manage to visit quite a number of our project schools and were heartened by the welcome we received.

As in the Kassel Project, this is undoubtedly the most enjoyable (and probably most important) part of the project. Although the development of resources has often seemed to dominate, we must keep reminding ourselves that it is the effectiveness of the teaching philosophy which is the most crucial aspect for analysis.

We have seen a range of teaching strategies in the variety of schools visited – many very close to what we were looking for and taking on board most of our recommendations, but others in which *MEP* has clearly made little impact – yes, *MEP* resources were being used but often only the text book and this being used in a conventional way.

We found on our visits that the value added data corresponded to how well or how fully the teaching philosophy was being implemented. This is reassuring but also worrying as there are many schools and/or classes which are **not** following our recommendations and their data will also be part of the overall evaluation of *MEP*. So we are keen to find out just how far the *MEP* teaching philosophy is being taken on board and what are the problems and difficulties hindering effective implementation.

Some of the issues which we feel are important aspects of the philosophy but which we did not always see being implemented effectively are:

- pace of lessons – often not varied enough and sometimes too slow (particularly when pupils were working at the board),
- interaction – the quality of the questions and your responses to pupils are crucial (asking vague questions can be unhelpful),
- activities – variety is so important (if every lesson follows the same structure then it soon becomes boring),
- mental work – still important with most sets in Y10 and Y11,
- whole class progression – working through exercises one by one, checking everyone's progress and sharing mistakes with the whole class,
- clear objectives for each lesson and summarising the main points at the end.

The use of regular homework (after every lesson) has caused problems in some schools, with senior management not agreeing to the recommended policy. Heads of Department in those schools should keep pressing for this, as it is an important part of the *MEP* teaching philosophy.

One other issue that it is worth noting is the difficulties classes had when using calculators – partly because of the variety of types being used, partly because not every pupil remembers to bring one to school and no spares are available and partly due to pupils' lack of understanding of how to use calculators effectively (e.g. use of the memory button and brackets). It would be so much easier if the school bought class sets (which could be sold to individuals) of the *same* calculator (with enough spares to ensure that every pupil has a calculator each when required). Then instruction from the teacher would be relevant to everyone!

It also became clear that whether or not a school is able to implement the *MEP* teaching philosophy effectively depends on its having:

- strong leadership from the Head of Maths,
- a united department, committed to the teaching philosophy.

However, it should be emphasised that we have seen teaching which has been interesting, stimulating and even inspirational at times and we look forward to seeing even more gains with the second cohort currently completing Y10. We are also encouraged by the fact that many teachers have been quick to change their Y7–9 practice and indeed have found it easier to initiate a new teaching strategy with younger pupils.

Finally, although we have much still to learn about how best to implement the strategy most effectively, our initial evaluation is very encouraging and we look forward with both excitement and apprehension to the next stage.

APPENDIX 1

School Performance Indicators

Cohort 1, Year 1

2.4
2.3
2.2
2.2
1.7
1.5
1.4
1.3
1.2
1.1
0.9
0.8
0.6
0.5
0.5
0.5
0.4
0.4
0.4
0.4
0.3
0.3
0.2
0.1
0.1
0.0
0.0
0.0
0.0
-0.1
-0.1
-0.2
-0.3
-0.4
-0.8

APPENDIX 2

Pupil Questionnaire Summary

Cohort 1, Year 1



MEP		
-----	--	--

PUPIL EVALUATION

Cohort 1, Year 1
1996-1997

DATE _____

Name Male/Female Date of Birth
49 51

MEP class Route St A E Sp Maths Teacher
24 43 29 4

No. of Maths Lessons missed Average: 5 Expected GCSE Maths grade Tier of entry

Numbers below each response are percentages.

A LEARNING STYLE in LESSONS

- | | | | | |
|---|--------------------|------------------|---------------------|-----------------|
| 1. Have your maths lessons changed with the introduction of MEP? | Completely
8 | A lot
39 | A little
48 | Not at all
6 |
| 2. Have you enjoyed the MEP whole-class teaching style? | Very much
10 | Sometimes
50 | Don't mind
34 | Not at all
7 |
| 3. How often did you take part in | | | | |
| (a) quick-fire mental practice? | Every lesson
2 | Frequently
21 | Occasionally
63 | Never
13 |
| (b) working out solutions on the board in front of the class? | Every lesson
10 | Frequently
25 | Occasionally
47 | Never
18 |
| (c) class discussions? | Every lesson
15 | Frequently
35 | Occasionally
41 | Never
9 |
| 4. If you thought of a different way of solving a problem did you tell the class? | Always
8 | Sometimes
32 | Only if asked
47 | Never
13 |
| 5. If you made a mistake did you tell the class/teacher? | Always
6 | Sometimes
24 | Only if asked
42 | Never
27 |
| 6. How often have you learned from the mistakes of others? | Every lesson
5 | Frequently
46 | Occasionally
44 | Never
4 |
| 7. If you did not understand something did you let the class/teacher know? | Always
18 | Sometimes
37 | Only if asked
31 | Never
13 |
| 8. Do you make more effort with your written work than before MEP? | A lot
10 | A little
27 | Much the same
57 | Not at all
6 |
| 9. How often do you try not to use a calculator for simple calculations? | Always
10 | Frequently
35 | Occasionally
48 | Never
7 |
| 10. Which part of your maths work has improved most over the year? | | | | |

Algebra (10%), All of it (7%), Trig (7%), Equations (7%), Fractions (4%), Mental Skills (4%)

11. Which part of your maths work still needs improving?

Algebra (17%), Trig (11%), Equations (7%), Fractions (6%), All of it (5%), Timetables (4%)

12. If you missed a maths lesson, how did you catch up? (If no lessons were missed, write 'none missed'.)

Copied from friend (34%), Caught up at home (11%), Asked teacher (10%), Asked classmate (9%), Did not catch up (9%)

B ASSESSMENT

- | | | | | |
|--|----------------------|--------------------|-----------------------|-------------|
| 1. How often have you missed doing the homework set? | Frequently
7 | Occasionally
26 | Rarely
48 | Never
19 |
| 2. How often is your homework marked by the teacher? | Every homework
27 | 1/week
42 |
19 | Never
11 |
| 3. How often is your classwork seen by the teacher? | Every lesson
34 | 1/week
39 |
14 | Never
7 |
| 4. How much revision do you do before a test? | A lot
27 | A little
53 | Not much
15 | None
5 |
| 5. How often have you been you been disappointed with your test results? | Every test
10 | Frequently
28 | Occasionally
58 | Never
4 |
| 6. How often do you try to find out where you made your mistakes and do the questions again correctly? | Always
20 | Sometimes
50 | Only if told to
28 | Never
3 |

C RESOURCES

1. *Pupil Text*

- (a) Do you take this book home?
- (b) How have you used the text?
- (c) Does this book explain the maths more clearly than your previous textbooks?
- (d) What do you *like* about the text?

After every lesson 24	Often 11	Rarely 27	Never 37
Classwork 52	Homework 18	Revision 26	Extension 3
Much better 39	A little better 37	The same 15	Worse 9

Worked examples (28%), Explains clearly (19%), Easy to understand (15%), Way it is set out (9%)

- (e) What do you *dislike* about the text?

Answers in back sometimes wrong (20%), Nothing (15%)

- (f) Did you ever try the *Just for Fun, Investigations, etc.?*

All of them 1	Often 7	Only if told to 39	Never 53
------------------	------------	-----------------------	-------------

2. *Practice Book*

- (a) Do you take this book home?
- (b) How do you use this book?
- (c) Do you ever do extra exercises just for the fun of it?
- (d) On the whole, how do you find the exercises?
- (e) How often do you make an effort to learn 'by heart' the *Facts to Remember* at the front of the book?

Stays at home 47	After every lesson 41	Rarely 7	Never 5
Classwork 12	Homework 60	Revision 19	Practice 8
Often 1	Occasionally 17	Never 81	
Too easy 4	Just right 81	Too difficult 14	
Every Unit 3	Sometimes 35	Only if told to 40	Never 21

Further comments on Pupil books

Practice Books need worked examples (15%), Books should be smaller (10%), Very good (8%), Ugly covers/colours too bright (8%)
Help with revision (8%)

D ATTITUDE

- 1. Have you worked harder in maths this year than in previous years?
- 2. Do you look forward to your maths lessons?
- 3. Do you arrive at the classroom on time?
- 4. Do you ever do extra work on your own without being told to?
- 5. Do you think you have gained confidence in maths this year?
- 6. Do you think you could do better in maths?
If Yes, how could you do better? If No, why not?

A lot 32	A little 42	Much the same 21	Less hard 5
Always 4	Most of time 22	Occasionally 46	Never 27
Always 47	Most of time 47	Occasionally 5	Never 1
Often 4	Occasionally 20	Rarely 45	Never 31
A lot 23	A little 47	The same 22	Less confident 8
YES 69	Don't Know 28	NO 3	

Revise more (23%), Work harder in class (15%), Concentrate more (14%), Listen more (5%)

E REACTIONS TO MEP

- 1. (a) How has *MEP* helped you most? (b) Where do you have most difficulties?

<p>+ Understand more (24%), Explanations clear (10%), Confidence increased (8%), Worked Examples (7%)</p>	<p>- Algebra (9%), Trig (6%), Homework (6%)</p>
---	---

- 2. Has *MEP* succeeded in raising
 - (a) your level of understanding of basic concepts? YES 84 NO 16
 - (b) your own expectations of what you can do? YES 75 NO 25

APPENDIX 3

Teacher Questionnaire Summary

Cohort 1, Year 1



MEP		
-----	--	--

TEACHER EVALUATION

Cohort 1, Year 1
1996 – 97

DATE _____

Name Male/Female Age ^{Average: 42} Experience as maths teacher ^{Average: 15} yrs
53 47 Range 22-59 Range 0-35

MEP class(es) taught Route No. in class: ^{Average: 12.4} boys ^{Average: 12.1} girls

Lesson time ^{Average: 49} mins No. of lessons per week ^{Average: 4} No. of lessons in year taken by others
Range 30-70 Range 2-7

N.B Numbers below responses are percentages.

A TEACHING

1. Has your teaching style changed with the introduction of MEP?	Completely 2	A lot 28	A little 64	Not at all 6
2. How often did you use	Every lesson 33	Regularly 55	Occasionally 10	Never 2
(a) whole-class interactive teaching?	Every lesson 2	Regularly 7	Occasionally 68	Never 22
(b) group work?	Every lesson 27	Regularly 48	Occasionally 19	Never 5
(c) individual work?	Every lesson 45	2/week 32	1/week 20	..... 3
3. (a) How often did you set homework?	Every lesson 48	Regularly 40	Occasionally 11	Never 0
(b) When did you go over the homework?	Every lesson 41	Regularly 43	Occasionally 13	Never 3
(c) How often did you go over homework at the start of a lesson?	Every lesson 2	2/week 13	1/week 58	..... 26
(d) How often did you mark pupils' work?	Every lesson 46	Regularly 42	Occasionally 11	Never 1
(e) How often did pupils mark their own work?	Every lesson 3	Regularly 42	Occasionally 52	Never 3
4. How often did you use mental practice?	Every lesson 19	Regularly 38	Occasionally 48	Never 5
5. How often did pupils come to front to work through solutions on board?	Every lesson 45	Regularly 46	Occasionally 9	Never 0
6. How often did pupils contribute to class discussions?	Every lesson 9	Regularly 10	Occasionally 63	Never 17
7. How often were lessons interrupted by disruptive pupils?				
8. If pupils were absent, what help were they given to catch up?				

Help given during breaks/lunchtime (16%), Individual help (16%), Copy friend's notes (10%)

9. If you were absent, what arrangements were made for your class(es)?

Work set in advance by absent teacher (58%), Never absent (9%), Lesson covered by: maths teacher (8%), other colleagues (8%) supply cover (6%)

10. (a) How often were your lessons observed by other colleagues?	Frequently 1	Occasionally 15	Rarely 27	Never 56
(b) How often did you observe the lessons of other colleagues?	Frequently 1	Occasionally 14	Rarely 22	Never 62
(c) Did you share problems/experiences of MEP with other colleagues?	Every lesson 3	Occasionally 86	Rarely 7	Never 3

Comments on MEP Teaching Philosophy

Please draw a rough plan of your classroom below.

Agree with philosophy (14%)
Interactive teaching more favourable (9%)
Improves standards (7%)
Should be introduced at lower end of school (5%)

Front facing with gaps (74%)
Groups (11%)
U-shape (6%)

C PUPILS' BOOKS

1. *Pupil Text*

- (a) Did pupils have a book each?
- (b) How often did pupils take the texts home?
- (c) How were the texts used?
- (d) (i) Did you use the *Just for Fun, Investigations, etc.*?
- (ii) If used, how did you use them?
- (iii) If not used, why not?

Yes 92	... . shared 8	Teacher copy only 0	
Every day 22	Frequently 9	Rarely 27	Never 42
Classwork 53	Homework 13	Revision 24	Extension 9
All of them 0	Frequently 6	Rarely 65	Never 29
Whole class 27	Individuals 37	Extension 25	Homework 10

Not enough time
Too difficult

2. *Practice Books*

- (a) Did pupils have a book each?
- (b) Where were the books usually kept?
- (c) How were they used?
- (d) If not used, why not?

Yes 97	... . sharing 3	Teacher copy only 0	
At home 53	In school 7	Brought in for lessons 40	
Classwork 12	Homework 55	Revision 25	Extension 8

Enough material in *Pupil Text*

Further comments on MEP teacher/pupil material

- Excellent resources (18%)
- Comprehensive (7%)
- Too difficult (7%)
- Worked Examples needed in *Practice Books* (5%)

D REACTIONS TO MEP

1. Please give brief summary of any feedback you have had from *parents*.

<p>+</p> <p>Positive feedback</p> <p>Improving standards</p> <p>Stretching pupils</p>	<p>—</p> <p>No feedback</p> <p>Too rushed</p> <p>No worked examples in <i>Practice Books</i></p>
---	--

2. Please give brief summary of any feedback you have had from *pupils*.

<p>+</p> <p>Clear, good text</p> <p>Enjoy maths more</p> <p>Confidence increased</p> <p>Sense of achievement</p>	<p>—</p> <p>Too much homework</p> <p>Not enough time</p> <p>Difficult</p>
--	---

3. (a) How has *MEP* helped you most? (b) Which aspects have caused you most problems?

<p>+</p> <p>Lots of good examples/questions</p> <p>Wide range of materials</p> <p>Lesson plans</p> <p>Change in teaching style</p>	<p>—</p> <p>Insufficient time</p> <p>Less able pupils not coping</p> <p>Not enough easy exercises</p> <p>Checking homework</p>
--	--

4. What further support would you like us to provide?

<p>Foundation / lower level materials and resources</p> <p>Key link questions identified.</p>

5. In your opinion, has MEP succeeded in raising
- | | | |
|---|--------|-------|
| (a) your own expectations of what your pupils can do? | YES 69 | NO 31 |
| (b) your pupils' level of | | |
| (i) attainment | YES 80 | NO 20 |
| (ii) understanding? | YES 82 | NO 18 |

E INFORMATION TECHNOLOGY

		Very	Quite	Not very	Not at all	No response
1.	<i>Graphics Calculators</i>					
(a)	How confident are you about using graphics calculators?	19	31	26	22	2
(b)	How many of your pupils have a graphics calculator of their own?	All of them 0	Most of them 0	A few 20	None 76	4
(c)	Since <i>MEP</i> , how often have you taught a lesson which required the use of graphics calculators?	Frequently 0	Occasionally 2	Rarely 12	Never 84	2
(d)	Since <i>MEP</i> , how often have you taught a lesson about the <i>effective</i> use of graphics calculators?	Frequently 0	Occasionally 0	Rarely 7	Never 90	3
(e)	In such lessons, how many different <i>types</i> of calculator were used?	All the same 6	One or two 6	Several 6	No idea 11	70
(f)	In such lessons how many calculators were used?	1 per pupil 9	..... sharing 6	Teacher's only 1		84
(g)	In which <i>MEP</i> Units did you teach these lessons?	..... None				
(h)	If you did not teach lessons involving graphics calculators, why not?	Not relevant to topics covered Pupils do not have them				
2.	<i>Computers</i>					
(a)	How confident are you about using computers?	37	47	15	0	1
(b)	Since <i>MEP</i> , how often have you taught a maths lesson which <i>required</i> the use of a computer?	Frequently 0	Occasionally 20	Rarely 16	Never 62	2
(c)	If you taught such lessons how many computers were used?	1 per pupil 15	..... sharing 28	Teacher's only 0		58
(d)	In which <i>MEP</i> Units did you teach these lessons?	..... None				
(e)	How often did you encounter technical problems?	Every lesson 0	Frequently 5	Rarely 18	Never 15	62
(f)	How much do you think pupils gained from such lessons?	A great deal 14	A little 19	Not much 4	Nothing 0	64
(g)	If you did not teach a lesson requiring a computer, why not?	Access difficulties Time pressures				
3.	<i>Interactive Learning Systems (ILS)</i>					
(a)	How much experience have you had of <i>ILS</i> ?	Expert 0	Use regularly 14	Very little 11	None 60	15
(b)	If used since <i>MEP</i> , how was it used?	Whole class 8	Part of class 2	Individuals 1	Teacher 0	88
(c)	Which <i>MEP</i> Units do you think benefited from the use of <i>ILS</i>?	..... None				
(d)	If used, what do you think are the main benefits/drawbacks of <i>ILS</i> ?	+ Reinforces concepts Motivation				
		- Cannot be sure work is understood Pupils can become disruptive				
4.	<i>Internet</i>					
(a)	How much experience have you had of the internet?	Expert 7	E-mail only 3	Very little 46	None 40	5
(b)	If used, how often do you access the <i>MEP</i> web site?	Daily 0	Weekly 1	Occasionally 19	Never 51	30
(c)	Which pages have been of most use to you and your pupils?	Puzzle pages Variety				
(d)	What additions to <i>the MEP</i> web pages would you like us to make?	Statistical data, GCSE revision News groups, Date of information				