



Qualifications and
Curriculum Authority

Evaluation of participation in A level mathematics: research instruments

Appendices M and N

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Appendix M

Interview Schedules – for Centre Visits

General points

Need to structure the information carefully around the questions – we will be using QSR N6 software to help us to look at the qualitative information, and this depends on consistency of reporting – both under question headings, and trying to keep paragraphs short and coherent for string searching later on.

We will put questions as areas for discussion, there may be some Yes/No element, but the purpose of these visits is to probe the issues around participation and retention and the impact of the changes to the GCE specifications in detail, and so we are looking for a richness of information here. The large scale questionnaire should address the 'big picture'.

We can provide copies of the old and new specifications for reference for each visit – the Mathematics team has suggested that teachers may find these useful prompts when describing the changes and their impacts.

We did ask for detail about participation rates for particular years, we will let you know what the centre said about the possibility of providing this information, it may be helpful for you to remind them that you will need this information if and when you confirm your visit in writing or email (I imagine this will be a useful measure, both to confirm your agreement, and in order to list the types of student that you will wish to interview).

Interviews with mathematics teachers

Interviews will focus on responses to the specification changes and on issues around participation and retention. Topics to be covered:

1. Background: Teacher name, position etc, length of time in post etc
2. GCE Syllabuses used, modules chosen, size of teaching groups
3. Criteria for entry onto AS and A level
4. Criteria for progression from AS to A level
5. GCSE Syllabuses used – if pilot 2 tier, opinion of their possible/actual impact on student progression to GCE
6. Re-sit policy for AS and A2 – and why
7. Cashing-in policy for AS – and why
8. Perceptions of the new GCE specifications – key things noticed, positive and negative aspects
9. Teaching approach to the new GCE specifications – what impact have the new specifications had? Prompt for pace etc

10. Opinions of the structural changes
11. Opinions of content changes
12. Pressures on time this year
13. Reduction of the application (optional units), and increase in the compulsory units – what do the staff think about this – what are the good things, what are the bad things? If there are bad things how can these be addressed?
14. Removal of indications of ‘background knowledge’ – what role did these used to play? What is the effect of removing them? Is it a good move?
15. Some parts of the new specifications encourage an approach of introducing a topic at AS level, with a more sophisticated treatment of the subject at A2, to encourage maturation. Have they noticed this? What impact will it have? Will it impact differently on different types of student (e.g. will it be better for AS students as they don’t do the hard stuff straight away, and perhaps be frustrating to the good A level student who may want to dig deeper straight away?)
16. What are the repercussions of having a unit where calculators cannot be used?
17. What’s the effect of being able to use a graphic calculator in all the other units?
18. Removing formulae– impact of doing this?
19. Student response to the specifications
20. Perception of assessment for new GCEs
21. Students reactions to assessment for new GCEs
22. What may the impact of the new specifications be on recruitment and retention – general discussion, in all respects.
23. Participation rates – probe particularly around the impact of C2K on numbers in mathematics – what happened about overall A level completion? What about recruitment at AS etc.
24. Reasons students give for dropping out – both during AS or A2 programmes, and from AS to A2.
25. Reasons teachers think are behind this dropping out
26. What is the gender balance of drop-out students?
27. Any changes observed in the patterns of student participation or retention yet? If so, to what are they attributable? (could be teaching staff changes etc, not necessarily the new specifications, prompt)
28. Recruitment to mathematics AS and A level – methods used, how effective?
29. Do they have any strategies in place to support participation and retention? Or to support students to continue from AS to A2 in mathematics? (e.g. workshops and at-risk strategies)
30. Have they switched to teach the new A2? If so, what was the reason for this decision?
31. What patterns of programme do they have? Do they run an AS only group? Or a one-year A level group? Do they split students into streams? If so, why? When did they take

the decisions they have, and for what reasons? How do they manage pace in mixed groups? What are the issues?

32. GCSE progression to AS and A level, probe for the issues around Intermediate tier (if they recruit from this tier), or what their policy is on recruitment to AS and A level and why? What are the detailed content issues – e.g. what will the intermediate students be lacking, how do they compensate for this?
33. If they are a pilot GCSE centre, ask them specifically about the impact that they think the new structure may have on recruitment to AS and A level, and why.
34. Ask about usual assessment pattern, why they do it, how successful this has been, whether they envisage any change, and why
35. Is further mathematics offered? Discuss patterns of take up over time, how the new AS all at AS may impact on this, who is offered FM as an option, how it is time-tabled etc.

Interviews with students

In my experience something around 5-7 students is a good number for a group, too few and they don't get beyond being shy, too many and you get the odd strident one and too much going on. This number is often a good conversation I think. We have said up to half an hour will be sufficient for the student groups, thus there are far fewer questions.

Interviews with A2 Students

Mathematics students will be interviewed about their experience of their study of mathematics study, for example, about how they are coping with the content, and how mathematics compares to other subjects at A level.

1. Reasons for continuing to A2 – do they enjoy mathematics? Is it for a particular goal, if so, what? Are they good at mathematics?
2. Attitudes towards/experience of mathematics at GCSE – did they enjoy it, what were the teachers like? Did they get good grades? What was AS like?
3. Experience of the new award – what topics have they enjoyed? What have the frustrations been? Assessment experience?
4. Attitude towards teaching/teacher – what do they think about their teachers, how many do they have? etc
5. Comparison of mathematics with other A level subjects studied – level of demand, pace of course?
6. Recruitment to mathematics – how was it done – was there any selling? By whom
7. What had they heard about mathematics A level before? From whom?
8. what support strategies does the centre offer to mathematics students? Are they useful?
9. Thinking back to GCSE, what topics do they feel they did not cover sufficiently well as a preparation for AS or A level?

10. How does Mathematics compare to their other subjects in terms of level of demand?
11. What are their perceptions of external examinations?

Interviews with AS Students

Mathematics students will be interviewed about their experience of their mathematics' study, for example, about how they are coping with the content, and how mathematics compares to other subjects at A level.

1. Reasons for continuing from GCSE – do they enjoy mathematics? Is it for a particular goal, if so, what? Are they good at mathematics?
2. Attitudes towards/experience of mathematics at GCSE – did they enjoy it, what were the teachers like? Did they get good grades? What was AS like? What tier did they take
3. Experience of the new award – what topics have they enjoyed? What have the frustrations been? Assessment experience?
4. Attitude towards teaching/teacher – what do they think about their teachers, how many do they have? etc
5. Comparison of mathematics with other A level subjects studied – level of demand, pace of course?
6. Will they progress to full A level? If not, did they originally intend to continue? If yes, what made them change their minds.
7. Recruitment to mathematics – how was it done – was there any selling?
8. What had they heard about mathematics A level before? From whom?
9. what support strategies does the centre offer to mathematics students? Are they useful?
10. Thinking back to GCSE, what topics do they feel they did not cover sufficiently well as a preparation for AS or A level?
11. How does Mathematics compare to their other subjects in terms of level of demand?
12. What are their perceptions of external examinations?

Interviews with students who did not complete their intended study of Mathematics A level

1. Reasons for dropping out – when did they decide they were going to stop studying mathematics? What were the main issues for them?
2. Attitudes towards/experience of mathematics at GCSE – did they enjoy it, what were the teachers like? Did they get good grades? What tier did they take?
3. Experience of the new award – what was it like studying at A level? What topics did they enjoy (if any), what was problematic? Did they feel that the step from GCSE to AS or AS to A2 was appropriate?
4. Attitude towards teaching/teacher – what did they think of the teachers? How many did they have etc

5. Comparison of mathematics with other A level subjects studied – level of demand, pace of course
6. What support strategies did the centre offer to mathematics students? Were they useful?
7. What could have been done to encourage them to keep studying – could anything have been done to prevent them leaving.
8. Recruitment to mathematics – how was it done – was there any selling?
9. What had they heard about mathematics A level before?
10. Thinking back to GCSE, what topics do they feel they did not cover sufficiently well as a preparation for AS or A level

Interviews with good GCSE Mathematics students who chose not to continue to AS or A level

Interviews will be held with Advanced level students who achieved a mathematics grade A or better at GCSE (potentially good A level candidates), yet have chosen not to continue with their study of mathematics into Advanced level.

The interviews will focus on why it is that students chose to follow other programmes of study, focusing particularly on why mathematics was not chosen. Students will be prompted for their experience of mathematics at and before GCSE, including their responses to the teaching that they had.

1. Reasons for their choice of A level subjects – prompt for issues around subject enjoyment, perceptions of demand, progression issues etc
2. Attitudes towards/experience of mathematics at GCSE - did they enjoy it, what were the teachers like? Did they get good grades? What tier did they take?
3. Reasons for not choosing to continue with mathematics study – prompt for internal and external reasons – guidance issues etc
4. What may have encouraged them to choose Mathematics – in what circumstances may they have continued?
5. Recruitment to mathematics – were they approached – was there any selling? Why wasn't it successful?
6. What had they heard about mathematics A level before?

Appendix N

Evaluation of participation in GCE Mathematics

Phone interview questions for teachers, June/July 2005

This telephone interview forms part of QCA's research on student participation in A level Mathematics after changes to the qualification in September 2004.

The purpose of this interview is to allow us to gather your views about how the past year has gone, reflecting on the issues raised by the revised specifications and their impact on teaching and students' experiences. The questions we ask you today will build on information that we gathered earlier in the year, both from case study centres like your own, and through our large-scale national survey.

All the information gathered over the year will be analysed and will form the basis for recommendations to the Secretary of State. We will be sending you a copy of our interim findings at the beginning of next term.

The information that you provide will be handled in accordance with the QCA Research Code of Practice. Therefore, anything that identifies individuals or organisations will not be released without your written consent and we will tell you about the outcomes of the research.

To start with, could I ask you to confirm the following details:

1. Your name
2. Your role
3. Length of time in role
4. Length of time at centre
5. Length of time in teaching
6. What type of involvement do you have in A level Mathematics planning and teaching?
7. Are your students following the old or new specification at A2?
8. Which awarding body do you use?

One of the issues in A level Mathematics is the recruitment of teachers. To help us look at this in a bit more detail, could you tell me a bit about the teaching staff for A level Mathematics.

9. How many teachers are there?
10. How many are male and how many are female?
11. What are the approximate ages of these staff?.
12. Are all of these teachers mathematics specialists?
1 or more non-specialists: any impact?

Now for the main questions.

What I'm planning to do is ask you firstly about student participation, then about the new specification, then about the exams, and, finally, what you expect to happen next year. Although I do have some set questions, please feel free to add any information that you think is important at any time, whether or not it seems relevant to the question.

First of all: participation

Centres who did not respond to the December staff questionnaire:

13. We are interested in the proportion of students in your school/college taking A level Mathematics in September 2003 compared with 2004. Was the proportion in September 2003 larger, about the same or smaller than in September 2004?

Centres who did not respond to the December staff questionnaire:

14. Thinking back, do you have a feel at all for whether this was any different in 2000, or pre-Curriculum 2000?

Get information either by referring to questionnaire, or question above:

15. You've indicated that the number of students starting A level Mathematics was [higher/lower/about the same] in September 2003. Could I ask, what do you think the reasons are for this?

Could you tell me, during this academic year, how many students did not complete their course of study:

16. at AS?
17. at A2?

*This can be an approximate figure

18. How does this compare with previous years?
Prompt for recent years, beginning of C2K and pre-C2K
AS? A2?

Centres with some non-completion:

19. What do you think the main reasons for non-completion are this year and do they differ from previous years?
Request detail

Centres with no non-completion:

20. To what factors do you attribute this success?

21. Do you think that the new specifications have made a difference to retention rates? Or do you think that they are likely to?

If not, what would make a difference?

If yes, why do they think that is?

We'd like to ask you about your reactions to the changes made in September 2004 and the reactions of your colleagues and students.

22. What are your thoughts on the new A level Mathematics qualification? What seemed to be the most significant changes? What was the impact of the changes?
AS? A2? Teaching? Learning? Exams?

23. Are there other issues that mathematics staff at your centre have commented on?

24. What has been the impact of reducing the optional units to 2 and spreading the core content over 4 units?

Knowledge and understanding? Slower pace to teaching?

25. Has the removal of indications of 'background knowledge' been helpful?

26. What have been the main impacts of the new A level on teaching?

Differences between teachers? Differences in approach to teaching different groups of students? GCSE intermediate/higher?

27. How do you think your students are finding the new A level course? How does that compare with previous cohorts?

Why? Boys/girls? Manageability/pace, relevance, attitude, confidence?

How do students find the difference between GCSE and A level Mathematics?

GCSE as preparation for A level?

We'd now like to ask you about the exams for A level Mathematics.

28. What is the exam entry pattern for your students?

Which modules examined when?

29. Is this different to previous years?

Which modules examined when? Pre-Curriculum 2000 pattern?

30. Do you think you will stick with this pattern?

The next thing we'd like to ask you about is your reaction to the examinations for the new A level.

31. What did you and other teachers at your centre think about them?

Compared with previous years?

Hard/easy? Appropriateness? Timing? Good/bad?

32. And how about your students?

Hard/easy? Which students? AS? A2? Boys/girls, GCSE Intermediate tier students?

What was their mood like, coming out of the exams? Coursework?

Now just a few questions about the next academic year.

33. Do you have any indication as to how many of your 1st year students will continue studying mathematics next year? If so, how does that compare with previous years?

34. How many do you expect to complete the full A level course?

35. Is there anything that you will change next year as a result of your experiences this year?

36. Finally, is there anything else you'd like to tell us that might be helpful to this evaluation?
Further Maths?