



## OFQUAL Consultation on A-Level Reform

### Response from the London Mathematical Society

The present administration signalled clearly when in opposition that they wished to ‘reform’ the existing A level structure in various ways. Moreover, their rhetoric of ‘increasing rigour etc.’ was in part due to complaints expressed by academics over a number of years. The consequent ‘reform’ is therefore a matter of profound importance to students, to teachers, to schools – and to the *London Mathematical Society* and its members.

We would welcome moves to reconstruct a system in which universities play a significant role in the design and operation of 16-18 education.

However, we insist that the given proposals are simply not fit for purpose – and in four key respects.

- First, if HE is to be re-integrated into the quality-control mechanism which underpins A levels, then this needs to be done in a natural and sustainable way, so that a small number of young academics see involvement in such matters as a natural part of their work, and are free to develop the requisite expertise over many years without sacrificing their careers. It is no good requiring each Awarding Body to *solicit* involvement *ad hoc* (as these proposals suggest) if government policy emanating from BIS patently fails to value the necessary involvement in supporting what is deemed to be the responsibility of the DfE, rather than of BIS (and UUK).

The current policy vacuum on this score has made universities reluctant to commit, and hence to deliver what is needed. And one cannot expect *Learned Societies* to step into the breach: learned societies would be happy to *contribute* – but such contributions are no substitute for the required *sustainable* national process and structure.

- Second, although the DfE and BIS failed to address this fundamental requirement (of finding a natural way in which academic involvement can be routinely and reliably achieved) *before* they charged Ofqual with the task of devising its consultation, Ofqual has apparently gone along with this neglect by interpreting the consultation as a process of ‘box ticking’ that concentrates on ensuring that Ofqual fulfils *its own* statutory obligations, even though the fundamental flaw above means that the overall scheme is not fit for purpose. (This was acknowledged at the day-long seminar that we attended run by *AlphaPlus*, where we were explicitly told – in the presence of Ofqual’s Director of Reform – that the purpose of the day was

“for *Ofqual* to ensure that it had fulfilled *its* statutory responsibilities, not to highlight fundamental flaws”

which were not Ofqual’s responsibility – even though the more fundamental questions kept reappearing during the day and clearly had no answer.)

- Third, instead of *insisting* that BIS and DfE devise a viable model for HE involvement *before* asking Ofqual to come up with proposals, the current proposals offload the responsibility onto Awarding Bodies (ABs) by framing each of its proposed “Conditions” in the form:  
*“An awarding organisation must ensure that ...”.*

We know of no effective system which would be able to make sense of such an approach.

We have checked these general misgivings with Awarding Bodies, with other professional groups, and with other delegates who attended your own day-long seminar run by *AlphaPlus*. Our misgivings are clearly widely shared. But Awarding Bodies depend on Ofqual’s approval, and so find themselves between a rock and a hard place; they therefore feel obliged to respond ‘positively’ to the demands imposed by the Ofqual proposals, even though they know that without a natural mechanism for serious academic involvement, the exercise is flawed.

Our fourth concern is equally disturbing – if more tightly focused on Mathematics.

- The ‘box-ticking’ exercise has been drafted (as far as anyone can tell) without considering the implications for *Mathematics* and *Further Mathematics* A level – even though
  - (a) these have now overtaken English to make Mathematics *the subject with the largest A level entry*;
  - (b) repeated public declarations (from Ministerial speeches and Select Committee reports to CBI concerns) appear to recognise *the central importance of mathematics*.

One might therefore be forgiven for assuming that any move to “reform A level” would have been constructed and checked *ab initio* to ensure that **the needs of Mathematics are routinely considered and accommodated** as part of the *central design* (not abandoned to repeated special pleading, or repeated appeals to “Condition 9: Exceptions”).

At the recent seminar convened by ACME at the Royal Society (in response to the united concerns of the Awarding Bodies), delegates were repeatedly astonished to find that, when they came to consider details, they either could not understand what the proposals meant, or where the proposals appeared to be clear they seemed to be *incompatible with* any sensible ‘adjustment’ of current provision in A level *Mathematics* and *Further Mathematics*.

The proposed system recalls the situation around 1980 which led to a long battle to establish

- a nationally agreed and imposed *common core* (of around half to two thirds of the A level).

Such a nationally imposed *common core* is both essential and clearly incompatible with

“65. There will be no subject criteria setting out core content requirements in key A level subjects”

which is in turn incompatible with

“43. [...] A levels [...] must also ensure that students have acquired any specific skills and knowledge that they need”

and with

“Condition 1 [...] An awarding organisation must ensure that each GCE qualification [...]

- permits UK universities to accurately identify the level of attainment of Learners.”

The current level of entries in *Mathematics* and *Further Mathematics* has been achieved only after two serious declines. The first, after 1990, was recouped slowly through the 90s – only to be more than wiped out as a result of the ill-considered changes imposed by *Curriculum 2000*. The resulting collapse in 2002/3 has now been numerically corrected – but only by adopting a structure which appears to be incompatible with the current proposals (including

- options which can be taken within *Mathematics* A level either as part of AS or as part of A2, and
- options which can be taken either as part of *Mathematics* A level or as part of *Further Mathematics*).

If *Mathematics* and *Further Mathematics*

“will not be able to meet these conditions” (para 75),

then it is hard to avoid the conclusion that the conditions have probably not been thought through.

These concerns are especially disturbing in a consultation which was launched on 20 June, with a response date of 11 September – dates which guarantee that the academic community and many teachers’ groups are unlikely to be able to give it the necessary attention. (For example, this may explain the very limited and unrepresentative participation in the *AlphaPlus* HE seminar we attended.)

**We therefore urge Ofqual to recognise these shortcomings and to urge the DfE (and BIS) to resolve the first main concern *before* Ofqual are tasked once more with devising a viable framework and of conducting a genuine consultation.**

We note that the current consultation focuses (roughly speaking) on ‘HE involvement in syllabus design’. We trust that Ofqual will soon address the strongly related questions of

assessment, CPD, and the production/endorsement  
of teaching materials (e.g. textbooks),

which is an area the DfE and Ofqual both acknowledge is in need of urgent attention, and one where input from HE and learned societies may be even more strongly required.

## Detailed comments on the consultation document (*italic quotes from the consultation document*)

Page 3: *“Like all qualifications ... to make sure they continue to meet the needs of their users.”*

We are aware of no existing effective mechanisms whereby this can be achieved. As long as Awarding Bodies (ABs) reflected their historical roots (the Oxford, Cambridge and London Boards in the obvious way; in NUJMB in Northern Universities; SUJMB, WJEC, etc. similarly), any blatant failure to meet the needs of users was likely to be noted. From around 1990, A levels came to be seen as a ‘school leaving certificate’ rather than ‘university matriculation’, their perceived focus, design and operation shifted to addressing the perceived needs of students and teachers – and the old university links were steadily eroded, and now no longer exist.

The *subsequent* expansion of universities meant that A levels became *once again largely ‘university matriculation’ exams*. But the old links cannot be simply revived (if only because BIS and UUK have taken a view of universities which is incompatible with such routine involvement in school syllabus design and examining).

*“the responsibility for developing core A level content ... will need to sit elsewhere in future.”*

This is true – but your response is hard to understand. We know of no effective system that does not have a *central curriculum agency*, with responsibility for cultivating cumulative expertise in such matters.

*“These studies have helped to inform the proposals that we set out”; also para 38:*

We feel distinctly uneasy about a national agency which lacks the necessary in-house expertise and so has to depend on externally “commissioned studies” to formulate national policy. Even were such a study to do as good a job as it could be expected to do, it could never achieve the level of insight needed to guide a national system without overlooking key constraints.

Page 5: *“I would encourage you to take the time to respond”*

The words are welcome. But they are incompatible with

- (i) the failure to recognise that there is as yet no viable mechanism for HE involvement, and
- (ii) the timing (20 June – 11 September) of the consultation.

## Page 6ff

*para 2:* We suggest that Ofqual should **not** have proceeded to draft “proposals” and to carry out a “consultation”, until it knew that the essential preliminary decisions and actions, which fell outside its remit, were being effectively addressed. We do not expect some form of public protest from a national agency. But it is unacceptable for this central responsibility to be off-loaded onto awarding organisations in the hope that their *ad hoc* arrangements may suffice instead (see second bullet point on page 1 above).

*para 4: “system in which the HE sector is meaningfully engaged”*

This is not enough. The engagement needs to be reliable, accountable, and (in some sense) representative.

*para 5:* Before making “proposals for the reform of A levels” we would prefer to see evidence of open discussion, which highlights some agreed problem, and which identifies a clearly effective way of addressing that problem.

The recognition of the need to re-engage HE is widely welcomed. But there is an eerie silence on the lack of a mechanism whereby this might be achieved (in a reliable, accountable, representative way).

*para 6: “last revised in 2008, and it is now time to review them once more”*

Please resist this urge to review and reform! Remember *Curriculum 2000*, Diplomas, etc.

*“government asked us to consider how to involve universities and learned societies in the future development of A levels”*

Your response should have been clear: the disconnect between HE and A levels cannot be resolved satisfactorily by the kind of *ad hoc* arrangements Ofqual might be able to encourage on its own.

Once BIS and DfE face up to the difficulties and oblige universities to engage in a systematic way, Ofqual will find that Learned Societies (such as the *London Mathematical Society*) are happy to contribute what they can.

*para 8: “those in HE and learned societies should be more involved in deciding the detailed subject content”*

Given a basic mechanism which encourages academics to develop the necessary expertise over an extended period, it is perfectly sensible to invite comments from “those in HE and learned societies”.

But until such a mechanism is devised, given time to evolve, and accepted, there is a serious danger that this will be mere ‘box-ticking’. It is unacceptable to merely require that ABs demonstrate

“significant and relevant subject engagement”

in an *ad hoc* way. (Who is to “decide the detailed subject content”? On what is their “decision” based? Who do they represent, and to whom are they answerable? And why should they be trusted?)

*para 9: “that universities are prepared to play their part”.*

The response from universities is clear – and has been made clear in public: they are highly nervous and are at present certainly **not** prepared to play the part which this framework requires of them. As always, some will respond for their own reasons – but they will not be representative.

We urge Ofqual to report back (honestly) to the DfE that, in the absence of clear changes in the responsibilities imposed on universities by BIS, and accepted by UUK, this crucial requirement is unlikely to be satisfactorily fulfilled.

*para 12; para 37: "A levels perform well against their international equivalents"*

We have already expressed our misgivings about inferences based on "commissioned research".

We strongly urge you to take more thought before basing proposed changes to the present system on such 'research' – not because the system is without its faults, but because, while it is easy to make changes that do serious damage, achieving genuine *improvement is hard* (please remember *Curriculum 2000* and *Diplomas!*).

Notwithstanding this 'conservatism', the stated conclusion in para 12 is at best complacent. A number of our best schools have abandoned A levels, and a number of our best university departments have concluded that they now prefer applicants with certain other qualifications. The most common alternatives, such as the IB, may not be suitable replacements for the mass of UK 16-18 year olds; but the phenomenon does indicate that the above claim is both superficial and strangely complacent (as are the *blanket* comments made concerning 'multiple-choice' questions, 'independent study', and 'extended essays'; we need to find ways of supporting good teaching – but as long as A levels are part of a blinkered culture of high stakes tests, league tables and accountability, desirable educational objectives are likely to remain elusive.)

*para 13: "greater clarity over the core knowledge required in some subjects"*

We agree. But **the consultation seems confused on this score.**

- Para 22 says the opposite;
- para 43 echoes the concern expressed in para 13;
- para 65 is then adamantly opposed to para 13;
- finally para 66 proposes a 'compromise' which pretends that there is no need to specify such a "core" centrally.

*para 17: "We look to ... to help facilitate the engagement of universities and learned societies"*

May we plead with you to do more than merely "look to"? The universal 'withdrawal response' from universities since the Secretary of State's letter to the Chief Regulator makes it clear that this is a major sticking point. Yet there is no sign of BIS and DfE addressing the underlying problem.

*"in the absence of subject criteria"*

**There are things which have to be specified centrally**, and there are things which can be left to ABs and to schools. We cannot make sense of a 'regulatory process' which rejects subject criteria and subject cores.

**para 22: This paragraph appears to be key.** Everyone would welcome reducing the regulatory burden to a minimum. However the proposed "minimum" appears dogmatic in ignoring the current situation, how it arose, and why it is needed. **It also appears to be incompatible both with *Mathematics* and with the whole idea of a regulatory body.**

*para 38: "improve skills in ..."*

The reference to these elusive notions as “skills” too easily slides into the suggestion that they can be taught and tested separately. We would welcome a clear statement that, insofar as these “skills” exist,

*they arise as a natural part of standard content, and need to be cultivated and assessed as such,*

**not** in some disembodied way. (See comment on para 63.)

*para 39: “for universities to determine”*

This is not as simple as you assume. It is unclear what would be meant were one to claim – much more modestly – that a *single* “university” had expressed a certain preference. (Does this refer to the view of a single consulted mathematician or an engineer? Or is it the consensus view of concerned academics throughout that university?) In the absence of any plausible mechanism for involving “universities” in a natural, reliable and accountable way, the collective attribution

“for universities to determine”

is no more than word-play.

*para 40: “consistency”*

This completely ignores the fact that the clientele at age 16-18 is now exceedingly broad.

The problem is not that there may have to be “exceptions to the conditions”: one cannot treat 50% of a group as an “exception”!

Nor does the problem arise solely because of “the particular needs of specific subjects”.

*Mathematics A level* entries have risen from 52 000 in 2002/3 to 86 000 – in (large?) part due to the flexibility of the current modular arrangements ( this *modularity* is part of the *course design*, and is in no way in conflict with end-of-course ‘linear’ assessment).

This suggests *both*

- that it makes sense to think in terms of a potential number of entries of over 100 000, *and*
- that *the number who may be comfortable with a wholly linear structure may only be around half this figure.*

Any organisation that cares about encouraging improved participation in mathematics should hesitate to impose restrictions that put “consistency” above participation.

(We note that some responses have stressed this as an “equality issue”. It is in fact more basic. We need to consider how one might make courses with *linear* assessment a **prerequisite** for *seriously numerate degree programmes*, while possibly offering differently assessed courses with a very similar syllabus for those with less ambitious goals – leaving candidates to “upgrade” if they need to. That is, we may need to abandon a rigid notion of “level 3 programmes” and to accept that some 16-18 courses are more demanding than others.)

*para 41: “However, ... to recognise achievement”*

This change occurred somewhere in the late 80s, when many of those in the “new sixth form” (who may have stayed on because ‘benefits’ were no longer available to 16 year old school leavers) signed up for A level courses without intending to go to university.

The recent expansion of universities means that almost all (80%?) of those taking A levels are now aiming to go to university – so the original function of A levels as ‘university matriculation exams’ has been largely restored.

*para 43: “ensure that students have acquired any specific skills and knowledge that they need”*

We would not wish to speak for other subjects, but *in Mathematics* this means that

**Ofqual have to face the need for a core and for subject criteria.**

This is further underlined by para 44/Condition 1.

(The recent SCORE and Nuffield reports – on the mathematics required in *other* A level subjects – revealed serious shortcomings in the way mathematics is currently required and assessed at A level in the sciences, computing and the social sciences; but the inference was of a clear need for *stricter central specification* of the mathematics to be required and assessed.)

*paras 48-55:* There is so much confusion here that it is difficult to comment intelligently. Option 1 has presumably been included as an Aunt Sally – so most will choose between Options 2 and 3.

- 149 000 students took AS Mathematics this summer. 66% of these achieved a grade C or better – most of whom probably intend to complete A2 next summer.
- This suggests that around 60 000 of these 149 000 students currently stop after completing AS Mathematics in Year 12 *with a flimsy grasp of the material*.

For some reason you ignore “Option 4”, which would reflect the original intention of *Curriculum 2000* that an AS level should be a ‘2 year half-subject programme’. Such an approach would allow these 60 000 students more time to absorb the content of AS Mathematics, and to emerge with a much more satisfactory grasp of “half an A level”.

It may be that the lack of qualified mathematics teachers means that a 2 year AS programme is currently not viable; in which case, most of the preferences expressed concerning Options 1-3 are likely to be pragmatic, rather than principled.

We urge you to do more than ‘count the votes’. In particular **please consult closely with the *Further Maths Support Network* to ensure that ‘Further Maths AS’ (with a remarkable 21 000 entries this summer) is in no way disadvantaged.**

*paras 55-56, Condition 3:*

We share the confusion of the ‘ACME + Awarding Bodies’ meeting referred to earlier. As it stands, this scheme seems unlikely to accommodate anything like the existing A levels in *Mathematics* and in *Further Mathematics*. For this to be corrected, one needs the idea that a “component” can be a ‘label’ or ‘named slot’ (such as “Mathematics: Applied”), which slot can be filled from a menu, with the menus for different components being allowed *to overlap!*



*para 57-59:* In Mathematics your minimum design rules **have to include a large, nationally agreed common core**. It is no good merely “encouraging exam boards to work together”.

*para 62:* Please replace “extended essay” by “extended response” – which would then include the typical well-written solution in mathematics (which is extended, and structured by the student, but which may include very few words).

*para 63:* We find the endless repetition of these terms disturbing. In one sense, we would all wish to encourage “critical reflection, etc.”. But on closer inspection, your intended meaning remains totally opaque. (We recall the rise and fall of *Critical thinking* as a separate exam. And school *mathematics* has suffered from advocates of “problem-solving”, who imposed a methodology of “how to solve problems” while removing serious problems from the mathematics curriculum and assessment!)

*para 64, Condition 4:* There is no benefit in a “variety”: what is needed is good quality questions. We doubt whether multiple-choice questions should have much of a place at A level.

*Condition 5:* The advantage of end-of-course assessment is that any question can include “synoptic” elements.

*Condition 7:* In standard academic programmes, that fulfil your requirement of ensuring fundamental content coverage, 60% is likely to be much too low.

*para 65:* **This has to go.**

*para 66:* “we expect exam boards to work with universities and learned societies”

**Ofqual has a responsibility to ensure that this interaction is rooted in a viable *mechanism* that will reliably deliver the desired outcomes. Hence they have to insist that DfE and BIS (and UUK) address this requirement.** It is no use passing the responsibility to exam boards.

*para 68:* “Universities should be at the centre of A level reform”

This is probably an overstatement – but they should certainly be closely involved. However, this “involvement” has to be reliable and representative, and so has to derive from some national mechanism. It cannot be based on the *ad hoc* contacts of any particular AB. **In the absence of such a mechanism, the sentence would appear to be no more than an empty aspiration.**

*para 70:* “Provided universities endorse these new qualifications, it will no longer be necessary ...” **We could not disagree more.** Even if there were a mechanism whereby the public could interpret what is meant by the claim that some qualification is “endorsed” by “universities”, the statutory responsibility for monitoring content could not be shrugged off in this way. Since there is no such mechanism, the paragraph is vacuous.

*“We will not require such core content requirements”*

**We object strongly.** The nationally agreed core in Mathematics is a hard-won compromise which cannot simply be thrown away.

*para 74, Condition 8:* This is an attempt to devise an alternative to the (missing) prerequisite mechanism for ensuring that the involvement of HE is reliable, accountable and representative.

Dr A. Gardiner

Education Secretary, *London Mathematical Society:* 11.9.12

The London Mathematical Society (LMS), founded in 1865, is the UK's learned society for mathematics. The Society's main activities include publishing journals and books, providing grants to support mathematics and organising scientific meetings and lectures. The Society is also involved in policy and strategic work to support mathematics and the mathematics research community. This work includes engaging with government and policymakers on mathematics education and research, participating in international mathematical initiatives and promoting the discipline.