

Tony Sanchez - Mathematics Teacher
District Panel Member (Maths C)
Brisbane Central

25 April 2013
Education and Innovation Committee
Queensland Parliament

Re: Submission to the Parliamentary Inquiry into Senior Mathematics, Physics and Chemistry Assessment

Dear Committee Members

I have been teaching mathematics for over twenty years. I am feeling increasingly concerned about the QSA and their approach to assessment. The workload is horrendous. The effect of this is that my preparation and student contact time is limited, and my stress levels are dangerously high. In fact, I am looking for part-time work. I know that most of my colleagues also hate QSA's approach to assessment in Senior Mathematics.

Perhaps more important, is the damaging effect this assessment is having on the students. They have too many long written assignments, are staying up till very late and have no time for regular revision of mathematics.

Problems with Alternative Assessment and totally INTERNAL ASSESSMENT in Maths

There is a mandatory requirement in Senior Mathematics in Queensland to include Alternative Assessment Tasks (other than tests) at least twice in Year 12. It is up to schools to ensure that work submitted is Authentic Work of the individual student. Good in theory, but poor in practice. Schools do not provide sufficient time to cover the entire syllabus in Mathematics B or C and also devote sufficient classroom time to these tasks. Much of the work is done in the student's own time. Access to tutors or collaborative work with other students can mean that the final product is

not authentic. The QSA also mandates that these alternative assessment tasks contribute significantly to the overall assessment package. Hence the grades on these tasks, even though typically higher than grades on supervised exams, strongly influence the final grade awarded.

Because all assessment in Queensland is INTERNAL, teachers control what aspects of the syllabus is covered, and what is left out. There is no penalty for not covering the entire course if teachers are clever enough to design their assessment tasks so that they appear to cover every topic's subject matter sufficiently. In Maths B, teachers are required to cover practical applications of:

(i) polynomials up to degree 2 (ii) reciprocal functions (iii) absolute value functions . It is possible for a school to only cover non-practical applications of one or two of these in a course of study. Panelists would not pick this up because they only look at one year's assessment of a school at any one time.

The advantage of External Exams is that they force teachers and schools to cover the whole syllabus. Leaving out any aspect of the syllabus subject matter may disadvantage their students. There is no advantage to a teacher in hiding subject matter they cannot cover due to time constraints.

Assessing mathematics through long written assignments is not valid for many reasons:

- (1) There is the issue of who actually does the assignments,
- (2) Students do not spend enough time at home practicing problems and revising the syllabus subject matter, because of time devoted to assignments.
- (3) Tasks given are not common to all students in the state (not a level playing field)

I bring to your attention the following table showing a comparison of the method Mathematics B is assessed in Queensland compared with its equivalent subjects interstate.

MATHS B and EQUIVALENT

Senior Maths Assessment - Qld vs Other Australian States (Prepared: 16 April 2013)								
Subject	State	Qld maths equivalent (Syllabus link)	Who assesses?		Marking exam questions: Individual questions = Total		Mandatory Assessment other than tests or exams?	
			External exam	Internal assessment	Numerical marks per Question added up to mark out of 100% Total Converted to A-E	A-E grading per criterion per item results in: Multiple A-E grades that become a single grade from A-E	Yes / No	% of annual assessment
1	Qld	Mathematics B	Nil	100%		All assessment items	Yes (≥ 2)	Not fully specified
2	NSW	Mathematics or Extension 1	50%	50%	All assessment items		Yes (≥1)	25%
3	Vic	Mathematical Methods	66%	34%	All assessment items		Yes (≥ 2)	< 34%
4	WA	Mathematics	50%	50%	All assessment items		Yes	Not fully specified
5	SA	Mathematical Methods	30%	70%	External exam and Skills and Applications Tasks	Folio	Yes (≥ 2)	25 %
6	TAS	Mathematical Methods	5 ratings A to E	7 Ratings A to E	External exam definitely		No	N/A

For full details on these figures, I refer you to the following websites:

<http://www.qsa.qld.edu.au/1892.html>

http://www.boardofstudies.nsw.edu.au/syllabus_hsc/mathematics-advanced.html

<http://www.vcaa.vic.edu.au/Pages/vce/studies/mathematics/cas/casindex.aspx>

<http://www.sace.sa.edu.au/web/mathematical-methods/>

http://www.scsa.wa.edu.au/internet/Senior_Secondary/Courses/WACE_Courses/Mathematics

<http://www.tqa.tas.gov.au/1090>

Problems with the Qld Moderation Model:

It was clear from my research that Queensland differs from all the other states by encouraging non-numerical (totally Criteria-based) methods of assessing students in Senior Mathematics. Even though QSA state that schools are allowed to use marks when grading, it discourages panellists (myself being one of them) to rely on marks at all during moderation. In the two hours allowed per submission, a panellist needs to look at the schools assessment package and the responses of up to ten students, and compare these with the STANDARDS (a subjective series of statements which can be interpreted differently by different teachers) to decide if the school is making valid judgements. Without any numerical data to support the submission, a panellist must decide within if all students have been placed accurately in a fifty point scale. There rarely is any information (solid numerical evidence) provided by the school to explain why one student is placed one or two rungs higher or lower than another on a fifty point scale. Panellists only get a collection letter grades on each assessment piece and then overall letter grades in each criteria for each student.

Knowledge and Procedures: A	Modelling and Problem solving: C	Communication and Justification: B
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Overall: HA 7

If a panellist believed the school has placed a student too high on the scale, they must find evidence (from where no numerical data is provided) to substantiate a drop in rung placement. Only if there is justification for dropping a student more than three rungs on the fifty rung scale (Eg. a Panellist cannot state that the student above is HA 5) would such a suggestion from a panellist be considered. Another panellist must agree that the evidence for a three rung drop is valid, again based on no solid numerical data. If agreement cannot be reached between two panellists and their interpretation of Criteria Standards, then the student remains in the position submitted by the school, whether it be accurate or not.

Each school in Queensland designs its own assessment. States other than Queensland which allow numerical data to be collected, particularly from an externally set exam common to all students in that state, will be better placed, in my opinion, to make valid decisions about a student's overall grade and placement.

Problems with QCS TEST replacing EXTERNAL EXAMS

Every state apart from Queensland uses external exams in each subject. The exams are directly based on the syllabus course material. Teachers and students of Mathematics Subjects can prepare for an external exam by looking at past exams and practising problems/questions. In doing this, teachers and students are spending more time on the syllabus material and hence a body of knowledge which will probably directly influence and support future tertiary study. External exams are more than just point in time tests, they are also experiences in the subject matter which is considered to be valued. It also addresses the thinking skills and processes essential to that subject area. For students studying mathematics at University, the subject matter covered in external exams will be directly useful in tertiary studies.

A QCS test on the other hand is a test on no specific subject matter. It is a test on a collection of “Core Curricular Elements” supposedly covered by teachers in each subject area. The test addressed specific skills such as comparing, classifying, etc. All of these are valuable attributes of learning, but the actual subject matter covered in the QCS test has no intrinsic value or use for University Studies. It is purely a test designed for ranking schools and students for University Entrance. It serves no other useful purpose.

Many schools no longer rely on teachers to transmit the CCE’s during regular lessons. I know of several private schools that spend two lessons each week preparing year twelve students for QCS. For example, they practice past QCS tests for the sake of developing the skills needed to answer multiple choice or short answer questions like the ones they will sit. My current school also hires motivational speakers and QCS experts who train students to have the right attitude for these tests. Days out of the classroom are devoted to dress rehearsals for a test with no actual relevant subject matter. With so little time to cover the subject matter in the syllabus, schools take time away from learning the disciplines to prepare for a point in time test with no actual relevant subject matter.

Problems with CRITERIA STANDARDS

The criteria paragraphs which QSA call standards, are the most tedious and time inefficient to use. They are subjective and unhelpful. It would be much more efficient to add up marks and award percentages, as has always been done.

I would also support state-wide externally-set exams set by teams of experienced and currently practicing teachers and discipline experts, in preference to the current system of social moderation. If two or more states collaborate to set the same exams, the cost would even be better.

Please help us. I am at my wits end and students' knowledge levels are dropping compared with many other states.

Sincerely,

Tony Sanchez