SMC&PA Submission 42
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To the Queensland Parliament Education and Innovation Committee,

I am a mathematics teacher and administrator with over 35 years' experience in both state and independent schools in Queensland and NSW. My current responsibility is for Mathematics in a large inner city Brisbane boys' independent school.

There are several ways that I think the system fails Mathematics. In no specific order, these are:

<u>The role of marks and letter grades</u>

The QSA expects students to be graded from A to E in each of the three objectives which are essentially doing, applying and communicating mathematics. These grades are recorded on a profile which is filed with the students' assessment scripts. In our school, there are over 100 students in a mathematics B cohort, almost 100 students in mathematics A and over 40 in mathematics C, each year. At exit it is possible to have over twenty students with the maximum performance grades of AAA and an overall achievement of VHA (very high achievement).

The extract from the syllabus (mathematics C) shows that there is very little difference between an A and a B level in knowledge and procedures. I pointed this out to the QSA representative I had access to at the time. To deal with this very difficult situation we designed assessment instruments with three levels of performance in each of the three objectives of knowledge and procedures (KP), modelling and problem solving (MP) and communication and justification (CJ). On the assessment instruments items are shown as level one or one star items*, level two or two star items** and level three or three star items ***, in KP and MP. The design allows a student who is successful at all level one and level two items to score a B grade at best since there has been no success with higher order tasks.

6.9 Standards associated with exit criteria

Criterion	*Standard A*	*Standard B*
Knowledge and procedures	The student work has the following characteristics: • recall, access, selection of mathematical definitions, rules and procedures in routine and non-routine simple tasks through to routine complex tasks, in life-related and abstract situations	The student work has the following characteristics: • recall, access, selection of mathematical definitions, rules and procedures in routine and non-routine simple tasks through to routine complex tasks in life-related and abstract situations
	• application of mathematical definitions, rules and procedures in routine **and** non-routine simple tasks through to routine complex tasks, in life-related and abstract situations	• application of mathematical definitions, rules and procedures in routine **or** non-routine simple tasks, through to routine complex tasks, in either life-related or abstract situations
	• numerical calculations, spatial sense and algebraic facility in routine and non-routine simple tasks through to routine complex tasks, in life-related and abstract situations	• numerical calculations, spatial sense and algebraic facility in routine or non-routine simple tasks, through to routine complex tasks, in **either** life-related or abstract situations
	• appropriate selection and accurate use of technology	• appropriate selection and accurate use of technology
	• knowledge of the nature of and use of mathematical proof	

A similar approach is used for MP and CJ. The work is graded with 15 possible graduations from E- to A+. These provide some ability to rank students as this is a QSA expectation at exit. Annotated student scripts make it clear that our assessment system has an underlying "marks basis" as is the case in many schools. When marks were omitted in the annotation of scripts, one panel noted that it was very difficult to evaluate student progress, which suggests that the teachers who are responsible for QSA practise are not convinced in its reliability either. The marks are translated into the letter expectations of the exit criteria, making the entire process seem a little false. In order to rank students who achieve our highest level of achievement, A+, A+, A at the top of VHA, we refer back to marks. Our students appreciate a system where it is clear how they are performing relevant to others and we defend a system where it is possible to explain this to their parents.

The QSA uses numbers when describing students' outcomes. An OP is not a letter and in the process of obtaining an OP the QSA uses school means on the Core Skills Test. The students leave this system and go to a marks based system at university – what is the point of the grades? Some schools have amazingly complicated procedures for arriving at grades. There is no common practice as all schools interpret the exit standards in their own way.

Assignments

An assignment provides an opportunity to investigate the beauty and majesty of mathematics, outside the world of pure mathematics. Perhaps they are best kept out of senior mathematics courses as unfortunately, when part of an assessment system, the intention of assignments are not appreciated by students.

Some students at our school have times when they are working on up to seven assignments at the one time. This opens up the possibility of cheating. The QSA is aware of that and indicates that schools should ensure authorship by using strategies such as open ended tasks and check-in periods. Most teachers regard this as time consuming obstructions to getting on with the business of teaching. We know that tutors are often hired to complete assignments or that electronic work is distributed to others and altered slightly in order to pass scrutiny. My school utilises an in-class post- test so that some clarity is available about a student's involvement in the production of their own assignment. Parents, determined to do the best for their children, will do the assignments for them. I am not sure of the ethics of such parental devotion.

In many cases students who cannot pass exams can pass assignments and scrape through courses. Students get a false impression of their suitability for the mathematics B course in particular. The standard is also very diverse with some students convinced that quantity assures quality.

The QSA has very vague policies about due dates. It seems that there are none. Students cannot be marked down for late submission. I still do not comprehend QSA's expectation on this. In the university system this is not tolerated so easily, with assignment submission boxes closing firmly at the due time. In a formal assessment task, there is a beginning and an end to the time available to demonstrate competence. Assignments should be no different.

There are so many problems with the assessment of assignments in senior courses that we would be better off without them.

Who is minding the minders?

The quality assurance that is meant to be produced by panels does not exist. Panellists work hard for little money to do what they believe is a useful process. External appraisal does not account for schools or individual teachers that overtly prepare students for assessment or teach the test. The converse is also true. Some items that are genuinely unknown to students are familiar to panellists and they may not make that connection, falsely believing that teaching for the test took place.

The standard of an A is not the same from school to school or district to district even though state samples are meant to assure that they are. I would love to see every senior student take an external exam of work studied over two years!

Thank you for the opportunity to express my views and those of my colleagues.