SMC&PA Submission 76
Received: 8 May 2013

Submission to:

**The Parliamentary Inquiry into assessment methods used in Senior Mathematics, Chemistry and Physics in Queensland schools**

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**Date:** 8 May 2013

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This submission is based on my 23 years of teaching Science to students in Years 7 – 12 at a range of educational institutions in Queensland. In that time I have coordinated many curriculum programs and I am currently working as a Head of Department in a large metropolitan school. I will briefly address the issues outlined in the terms of reference:

• Ensuring assessment processes are supported by teachers

• Student participation levels

• The ability of assessment processes to support valid and reliable judgments of student outcomes.

**Ensuring assessment processes are supported by teachers**

Over my teaching career I have seen a significant change in assessment practices in Science (including Senior Chemistry and Physics). **I**n my early years of teaching the main method for collecting evidence of student understandings and skills in Science was by written exam, however in more recent years the use of authentic assessment tasks (such as Extended Experimental Investigations and Extended Response Tasks) has greatly increased. Authentic assessment tasks engage students in meaningful, real-life tasks related to the curriculum which require the student to use their understanding and skills to perform an intellectual task as may be required of them in their adult lives in work or the community. This approach to assessment is well supported by teachers in the Science department at my school.

At my current school we use a range of assessment methods across a course of study to make judgements about how well a student understands what has been taught and how well they are able to perform the required skills. A range of methods caters for students with varied learning styles and allows multiple opportunities for them to demonstrate their understandings and skills. Exams provide reliable evidence about student's abilities. Authentic assessment tasks engage students, provide opportunity for higher-order thinking skills, have validity in their alignment with the learning opportunities the students have been provided with and provide the opportunity for students to apply the understandings and skills they have learnt. When discussing the need for a range and balance of assessments with other teachers I often refer to this example, 'would you rather fly in the plane of a pilot who has passed an exam about flying or one who has actually landed a plane before?' Assessing a pilot by both exam and authentic task increases the confidence that the passengers have about how good a pilot is just as assessing students using a range of methods increases teachers' confidence in the judgements they make about how good their students are. Assessment based on an exam alone would be very lacking in this case as it would be in our current education system, students should have the opportunity to demonstrate their learning in a range of situations to provide a valid and reliable assessment of their understanding and skills.

Teachers are well supported in interpreting QSA syllabus requirements and are encouraged to collaborate and share their understandings. When new syllabuses are introduced it is very reasonable to expect

teachers will spend time familiarising themselves with the syllabus. Part of this process includes developing a work program outlining how they will implement the syllabus**.** Teachers are also given opportunities to attend professional development workshops about the syllabus.

In my present school I am confident that all of the teachers on the Senior Physics and Chemistry classes have a sound understanding of the syllabus requirements**.** While two of those teachers are District panellists, another one has only been teaching the subject for a short time and I have worked with him to build his understanding using the panel's feedback on the R3 and R6 submissions to assist him in his interpretation of the syllabus and associated assessment requirements. Another teacher is a graduate and he is working with a mentor (a teacher of the same subject and year level) to build his understanding of the syllabus and the associated assessment processes. All of these teachers have confidence in the judgements they make about the evidence in a students' assessments tasks and the standard each student is awarded.

**Student participation levels**

In my experience I have not observed any significant change in trends in student numbers enrolling in Senior Chemistry and Physics. Individual students continue to have preferences for certain assessment methods (exams vs authentic tasks such as EEIs and ERTs) however there is no observable trend across the groups for one type of assessment instead it seems to be related to an individual student's learning style preference.

In terms of student engagement and participation I continue to be impressed by the quality of work produced in EEIs and ERTs. Because students usually have some degree of choice in the specific topic of research and they are able to see the relevance of the task to the real world, their motivation for the task is greatly enhanced.

**The ability of assessment processes to support valid and reliable judgments of student outcomes**

As a teacher and Head of Department I have a very high degree of confidence about the validity and reliability of the judgements we make about student achievement in the QSA senior sciences offered at our school. Given the syllabuses have been the same for some time and the exit criteria provided in the syllabus are very clear, I find it quite easy to use those criteria to make judgments about **students' p**erformances in their assessment tasks. Using a folio of work and a range of assessment methods as outlined in the Chemistry and Physics syllabuses enhances validity and reliability.

An important part of making valid and reliable judgments is in designing assessments that actually provide students with opportunities to demonstrate the exit criteria and the many examples provided on the QSA website support my ability to do this. The benefit of criteria over marks is certainly evident in assessment design because it makes it very clear what we need to assess the students on. On this point I see no purpose in discussing the use of marks vs criteria in Chemistry and Physics assessments as Queensland has a long established commitment to standards based assessment and any inquiry into this practice would need to include all senior subjects not just those identified in this inquiry.