Steve Crapnell

[redacted]

7 May 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 Senior Mathematics for 26 years in Queensland and during that time I have also been a Head of Department – Mathematics for 21 years. During my teaching career I have served on State and District Panels for Mathematics. I feel I have a breadth and knowledge of experience that will allow me to comment within the terms of reference presented by the Committee.

1. **Ensuring assessment processes are supported by teachers**

Due to the collaborative teams that exist in the delivery of the senior mathematics courses I have found that teachers will ensure that the assessment process is supported. This does not, by any means, suggest that it is supported in the sense that teachers agree with the methods and approaches defined in the current QSA Senior mathematics syllabi. It simply means that they support the assessment program because they must in order to effectively deliver the course according to QSA requirements. This point needs to be stressed, teachers are professional and will support the implementation of a program, albeit with little or no confidence in the reliability or validity of the suggested assessment outcomes. Careful interpretation of the word support needs to be examined. Support does not necessarily equate to belief in the assessment process.

I have found the majority of teachers who I work with, and socialise with, are in universally opposition with some, if not all, aspects of the assessment process in Senior Mathematics.

The task to create, administer and grade a single item is time consuming and ambiguous. This detracts from the time and energy that is available to a teacher to focus on their number one priority, that is, to develop effective teaching and learning environments that adapt to the complex and ever changing nature of the world we live in.

The time consuming nature of creating and grading assessment tasks has increased exponentially since I began my teaching career and yet my confidence in the reliability and validity of the results produced by the QSA mandated assessment process has decreased. I spend an inordinate amount of my time at work and at home either planning, preparing or grading assessment tasks. That time has to come from somewhere. It comes from the pool of time I have available to prepare, design and implement courses that engage, inspire, effectively transfer requisite knowledge and develop skills required for problem solving. I think we have this allocation of time, energy and focus the wrong way around. Fix the assessment process please…the tail is wagging the dog.

2. **Student participation levels**

I have to preface my comments by asking why is this topic part of the terms of reference? Is the hypothesis that workload and assessment techniques are causation factors in falling student participation levels? To paraphrase from another document, we hold these truths to be self-evident in as much as any student participation level will drop if you (i) design assessment tasks that are inordinately long, time consuming and with questionable relevance, and (ii) design assessment criteria that are not transparent.

To examine student participation levels and to be satisfied with steady levels of participation is also a false economy. In this age of emerging and developing technologies, one would expect that student participation levels in the mathematics and sciences would be on the increase.

Another point that should be raised when questioning student participation levels is University entrance requirements. Universities need to take ownership in declaring a clearer prerequisite picture for students. Can anyone suggest why Mathematics C is not a prerequisite for engineering? This is a little mystifying for the lay person and, most probably, any engineer. Is there a perceived lack of faith in the standard of student that the

current senior Mathematics courses are delivering? A suggestion could be that more time should be spent teaching and learning rather than researching and writing an EEI etc.

3. **Ability of assessment process to support valid and reliable judgements of student outcomes.**

I believe that the assessment process in Mathematics is not consistently reliable and/or valid when producing judgements of students' outcomes. I will address three areas which I believe lend support to this statement.

(i) *Communication and Justification criterion (CAJ)* – In my experience, this has been the most problematic, difficult and poorly implemented of the three criteria with respect to consistency and accuracy. This is due to the fact that many of the identifiers are inextricably linked with the process of effective problem solving and should not be separated and judged independently using its own A-E scale. In terms of application of the criterion to specific tasks, I have seen a wide and varied range of teacher interpretation when applying task specific criterion sheets to the CAJ component of an assessment task, within the same school and across a range of different schools. Given that CAJ is one third contributor to the overall grade of a senior student in mathematics, this is a worrying trend in terms of reliability and validity. The second feature of the CAJ criterion results when a student may make an error in the problem solving of a question that precludes them from demonstrating the full range of CAJ expected for a question. This student is then penalised twice for the one error, once in the MAPS and then secondly in the CAJ. Not entirely fair.

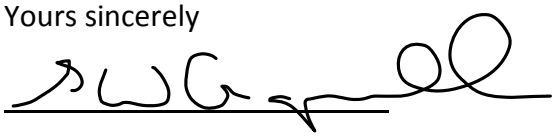
(ii) *The concept of routine vs. non-routine questions* – The best analogy I can think of here is the fox guarding the henhouse. Assessment items are to provide a range of questions which allow students to demonstrate success on simple routine to complex non-routine types of questions. Great sentiment until an exam paper is set and then who is to say what then remains non-routine to all or any class. While working on District Panel, suspicion would often fall on particular responses by SA achieving students on supposedly complex unfamiliar questions. This would raise into question, dare I say it, the reliability and validity of that

question as truly complex unfamiliar. What is truly rehearsed/unrehearsed, routine/non-routine?

(iii) *End of Year Ranking Procedures* – The procedures that require teaching teams to rank students on a 50 point scale at the end of the year are complex, time consuming, sometimes subjective and not particularly transparent. The use of three A-E grades (albeit with qualifiers) combining to reach an overall exit LOA is the first issue with respect to the reliability and validity lens. The fact that each school has their own 'approach' to combining individual assessment pieces to achieve an overall LOA and placing students on an R6 raises the question of consistency across the different schools. Recall, schools are all setting different assessment pieces, of varying degrees of difficulty and rigor, based on their interpretation of a syllabus before each applying their 'own' approach to the ranking process. Consistency, reliability and validity would be nigh impossible to achieve within a single school let alone across a State.

I would like to thank the Education and Innovation Committee for taking the time to review my submission and I sincerely wish for an outcome that benefits all stakeholders in this process.

Yours sincerely



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