

The Education and Innovation Committee
Parliament House
Brisbane QLD 4000

10 May 2013

Dear Secretary of the Committee,

**Please accept my submission for the Inquiry into
Assessment Methods for Senior Maths, Chemistry and Physics in Queensland Schools.**

I ask that you keep my contact details withheld but you may publish my name.

My qualification is Bachelor of Business, majoring in Marketing and Hotel Management, and I have been employed in many positions that involve high levels of mathematical and technological skills, analysis and management. I have also studied quantitative and qualitative analysis and have used this in previous corporate organisations. Currently, I am the executive accounts manager for a Marine Engineering business.

I can say with confidence, that my A grades in maths at school many decades ago, stood me in good stead and enabled me to aspire to such demanding careers.

Regarding the Term of Reference on whether the current QSA (Queensland Studies Authority) methods support valid and reliable assessment, I wish to state that the current methods are absolutely unacceptable for the current cohort going through.

I also do not wish these methods to be applied to my own children who are currently in primary school. Unfortunately, it appears that primary schools, whether private or state schools, are already being pressured to use the same assessment methods by the QSA.

The methods used are **invalid** from my observations due to:

1. QSA is measuring the wrong things or even the wrong person in the first instance.

- Children can cheat on assignments. No doubt they will use whatever resources they can because the assignment topics are far too difficult and far too open-ended. They can also bring family knowledge to school for in-class assignments. Forcing students to research their assignment is cruel and expecting them to be 'A'-class researchers instead of teaching them the knowledge they need and testing it.
- For examples, I have had to help my nieces, family friends' children and neighbours' children to complete assignments in both Mathematics A and Business Studies in Year 11 and 12. The QSA now forces students to do a lot of 'self-directed' or 'inquiry' learning at home and even in class, as if that would make the disadvantage of cheating assignments disappear. It just widens the gap between the have and have-nots. My nieces were at an advantage because as soon as they found out that they had to use complicated excel spreadsheeting applications that the entire class was struggling with, they came to me on weekends for tutorials. That is because many sophisticated applications of excel spreadsheet formulae were needed to be applied in order to present a variety of data as required by the QSA. The level of these outside skills not taught thoroughly at school in the first instance was on par with double-weekend courses that adults pay hundreds of dollars to learn over several hours. I add that this occurred at two different schools.
- The type of business and banking acumen needed to fulfil the assignment requirements of the pure mathematics subjects was astounding. One might argue that these children whom I have tutored could have somehow researched these for themselves. Indeed at university, these would have been ideal topics for a more descriptive economics course, where students may only do four subjects and have 3 months to complete them, and that is

where they belong. I suggest here that any child that does not come from a well-connected home with relatives or friends in highly educated circles will be extremely disadvantaged.

- However, 'inquiry-learning' as trumpeted by the QSA, a faddish approach to learning without a solid evidence base for its effectiveness, is also obviously impossible from a time-constraint basis when students come home after a full day at school, have to complete homework alone, then design, research and finish extensive essays in other subjects, whether History, English, Legal Studies and so on. This is on top of the massive learning curve that is needed just to teach themselves the physics and chemistry of the hardest subjects they were taking, in order to complete those assignments.

2. **QSA has set the wrong method of testing students** (that is, incorrect "construct validity")

- De facto English essays, as Professor Peter Ridd has so aptly described in this briefing to parliament on 6th March, 2013, are not the correct method of setting assessment for these subjects, no more than getting a dance student to prove they can dance via a pen-and-pencil test, as the Australian Council of Educational Research has so well described in Submission 58 to this inquiry. You cannot work out if a student will be an accurate mathematician to rely on when building a bridge, if you force him to be tested on hours and hours of English writing.
- I have seen the length of essays expected in the hard sciences (maths, chemistry and physics). The QSA word-count 'recommendations' are completely meaningless unless mandated with penalties. The children will naturally try to out do each other because there is no provision for them to prove their knowledge with fair, common benchmark exams.
- Also, the assignments are open-ended, which means that the child with the most complex experiment design, or justification, or university-level data in their assignment would beat the others. I believe that absolutely no assignments should be set in these subjects whatsoever and that only very short lab reports, as part of only one night's homework should be allowed in the sciences. The experiments in turn should have fixed designs with predictable results in general so that teachers have the expertise needed to be able to judge the results fairly. It is apparent that even QSA people don't know what exactly they should be looking at. (QSA, 20th March, 2013 speech to parliament on the parliamentary website).
- The statistics for the tail end of results being overrepresented by children coming from low-SES homes, trailing way behind in their results and including for Indigenous students being unable to complete high school is well-known in the papers. It is absolutely no surprise with these biased and harmful demands of assessment. Without a higher level of educational background in parents – which should NOT be a disadvantage to their own children – there is evidently far more chance these children will fail. That is because the QSA imposes a cafe-swilling elitist view that students should be able to present enormously sophisticated data and write sophisticated justification and evaluation of their own conclusions... as if every family has time to sit around after dinner discussing international relations and the influence of the economy on their choice of fixed or variable interest rates.
- For a start, many families do not have the time to help their teenager with the kind of sophisticated thinking processes that students in Qld schools are invasively asked to write about by the QSA. Imagine all the families whose parents, whether tradespeople doing demanding physical labour or shift nurses for example, would be simply too tired or unavailable to help their children to discuss or check drafts, as other parents may have the time or expertise for?
- Then there is the expectation that children have the background knowledge or can seek such wisdom at the touch of their fingers by googling. Many families may not know what a fixed or variable mortgage is before being asked such questions in assignments. The school should be teaching the pure mathematics and relevance of these choice of interest

rates in class and teaching and testing them thoroughly, not making them write an essay about their opinion on them and not forcing them to produce a dozen spreadsheets to 'represent' and 'relate' their maths in different technological forms just to make it look good.

- It is not a stereotype but a statement of fact, that students that come from homes with lesser English spoken or read at home will be disadvantaged also. (for example, it is well-known that many students with Indigenous background are ESL (English as a Second Language due to speaking Creole at home). I, myself, came from a home where English was not well spoken and I certainly would not have had the skills myself, nor the option of checking drafts with my parents, and would not be where I am today if I had been asked to present my maths or science skills with all this superfluous and impossible - i.e., invalid – assessment. I enjoyed Maths, I enjoyed Physics and I enjoyed Chemistry for the knowledge, skills, rules and formulae that were taught directly in class, that still serve me today, not for any written English assignments I would have to do in today's schooling.
- I particularly object that the fad-based learning approach called 'inquiry' or 'constructivist' approach is used in Queensland as the main approach. Unlike its name, constructivist learning does not help the child 'construct' their own learning at all, it just drops them off and expects them to find out everything for themselves. Then we parents have to pick up the pieces with their homework. I object to this most strongly. I would like my children taught by Direct Instruction (which has much evidence for success) and tested directly. I would like them to enjoy maths and science like I did.

3. QSA is using ridiculous, unreliable methods to assess students in all Senior subjects.

- I don't want this unfair marking for my children either. It particularly does harm to the maths, chemistry and physics subjects because there are black-and-white answers that need correction.
- I have seen the A to E letters that are put on my nieces results. They are completely misleading and also completely unfair.
- They mislead by not telling if the student got all or parts of the questions right or wrong.
- But what is really shocking is that the letters of a lower standard are put against answers that were correct in the first place. I have read that this is because children should know if their answers are of high or low quality. What an extremely insensitive approach. They should know if the answers are right or wrong. If the question was a 'low standard', then the question should only be awarded a couple of marks. And if it is 'high quality', then the child gets more marks. It could not be simpler. Why does the QSA have to take something that is intuitive and simple and make it far more complicated - and biased – than it needs to be?
- The problems with this must be enormous. I think that students are being marked down for doing good work because the QSA has decided that knowledge and facts are of low standard. This is giving children an incentive for avoiding learning the basics. It is teaching them that hard work is a bad thing.
- As a person that has to deal with numbers every day, I am even more angry that children, my children in the future, could be deprived of well-designed tests because the QSA refuses to record data by way of numbered scores on children's tests. It takes a lot of expertise to design good tests, no doubt. But they cannot be analysed for how they test children fairly if the statistics are not available to examine because the QSA is avoiding the collection of numbered scores. How can they sum up the overall situation? How can they say how a student is doing from one school compared to another? It must be done with numbers. It is the only sensible way as expected in all workplaces where quality-assessment audits are done. Then, if there are trends that are extreme, the reasons for those trends can be investigated. So, for example, if statistics was used to assess how well students are doing in a school at maths where they are expected to do 2000 word

essays compared with another school that just focuses on teaching directly and exams, there might be trend that shows a drop in standards where the essays are done instead of learning all the maths.

So please, what is really needed is an urgent state wide notice to all teachers to return to marking normally as soon as this inquiry is finished. It is needed out of fairness to the current Senior school children and out of fairness to my own children so that by the time they come through, the assessment methods have been already checked every year for validity and reliability, depending on whether they gave everyone a fair go or whether they biased the results in favour of children from educated homes, etc. **Then, those assessments should be dropped.**

In addition, I believe that setting up a state wide exam at the end of the year for every subject in high school is an absolute necessity and statistics should be used to check the tests used in school, against that benchmark exam, to bring fairness and accountability into this system and give Qld school children the valid and reliable assessment they all deserve.

Best Regards

Mrs Sonia Ballen (BBus)

