

## Submission to The Parliamentary Inquiry into Assessment Methods for Senior Maths, Chemistry and Physics

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**Brief History:** I began teaching in Biloela in 1973 and have also taught at Mackay SHS, Mirani SHS and currently, Sunshine Beach SHS. I have been a Head of Department (Mathematics) since 1978. In that time, I have been involved in the moderation practices with the Board of Secondary School Studies and the current QSA in the following capacities:

- Panel member from 1973 - Biloela SHS
- District Moderator (Mathematics) - Mackay District
- Panel Chair - Mathematics I & II – Mackay District
- Mathematics A Panel Chair - Mackay District
- Member of Mathematics B panel – Sunshine Coast (1999- 2003)
- Member of Mathematics C panel - Sunshine Coast (2004 – 2013)

At Sunshine Beach SHS, there are currently twelve (12) teachers of senior Mathematics. Ten out of the twelve have been teaching Senior Mathematics for over 20 years. In short, the school has a very experienced group of Mathematics teachers whose teaching experiences cover most of Queensland.

### 1. Ensuring assessment practices are supported by teachers

1. Currently at Sunshine Beach SHS, the assessment model across Years 11-12 in Mathematics involves the following:
  - **Mid-semester test** - 2 hours – done under normal exam conditions
  - An **alternative assessment item (ie an assignment)** in which students are given sufficient time in class to gain a C standard – in practice this is usually 1 to 2 weeks. Students then need to spend time at home to complete the assignment.
  - **End Semester test** – 2 hours – done under normal exam conditions

Under QSA guidelines, the alternative assessment item (ie the assignment) must contribute “significantly” to the assessment for the semester. In practice, this is around 25%.

#### Is this assessment model supported by the teaching staff at Sunshine Beach SHS?

- By and large YES. However, we would appreciate some guidance on a limit to the length of the alternative assignment. At times, some students are verbose and a clear indication on a word limit by QSA would be appreciated by all.

- As a staff, we are quite happy with the concept of the alternative assessment/assignment and its use as a teaching tool. Many of the learning experiences that students encounter here would not be possible to emulate under a normal supervised exam.
  - We are the first to admit that the digital age has caused problems with ownership of the assignment. In addition, students using tutors to assist with the assignment is an issue as well.
  - We believe by limiting the assignment to “around 25%” of the semester’s marks, we can largely overcome these issues.
2. In the subjects Mathematics A, Mathematics B and Mathematics C, there are three (3) criteria listed in the syllabus. These are as follows:
- Knowledge and procedures (KAPS)
  - Modelling and problem solving (MAPS) and
  - Communication and justification (CAJ)

In each of the syllabuses, these three criteria are “equally important” so that to gain a VHA, a student needs a minimum of 2 x A + 1 x B. One of these A’s could be in CAJ.

### **Use of marks in KAPS and MAPS**

At Sunshine Beach SHS, we use marks for both KAPS and MAPS.

Under QSA guidelines, there is great pressure for schools **not to use marks** in both KAPS and MAPS. The belief is that some form of grid or “tick sheet” can be used to indicate if a student has satisfied the descriptors for an A standard (or a B standard etc) on each of these two criteria on a particular test or assignment. I have found this method rather confusing and it is difficult to keep a track of all the relevant descriptors when marking student scripts.

However, I believe that if assessment items are set with an appropriate range of complexity, then the use of marks and the aggregation of same is valid. In addition, marks automatically take into account the weighting of various items ie a 5 mark question is clearly more important than a 2 mark question. Such weightings never seem to be clear in the “tick method”.

When adding marks and coming to a total or percentage, one can be fairly certain that two students on the same mark are “pretty much equal”. However, with the tick method, one would still need to add the ticks to determine the final placement.

### **Is this assessment model supported by the teaching staff at Sunshine Beach SHS?**

- We do NOT support the tick method in the KAPS and MAPS criteria and are quite happy to continue with the use of marks.

## **The CAJ criteria**

With the CAJ criteria, it is not possible to use marks. This criteria has been an issue for teachers since its introduction around 20 years ago. The reason is simple – it is very subjective. At Sunshine Beach, we have devised “tick sheets” in CAJ to try and reduce this subjectivity. While we believe that we have partially achieved this aim, as a school, we are less confident in the decision making process in awarding a CAJ standard than with KAPS and MAPS.

With the KAPS and MAPS criteria, it is generally clear to students what is required to gain an A or a B in these criteria. However, with the CAJ criteria, this is rather vague and nowhere near as clear cut.

In my experience at Panel, I sometimes see evidence of such tick sheets but frequently none are evident when one reviews the work of other schools.

### **Is this assessment model supported by the teaching staff at Sunshine Beach SHS?**

- We find this criteria confusing at times and would be quite happy if it was eliminated as a criteria in deciding the Level of Achievement of students.

## **2. Student participation levels**

I don't think the assessment methods have a great influence on the subjects chosen in senior Mathematics. By and large students and teachers see KAPS and MAPS as the most important of the three criteria.

In 2013, I have 25 students studying Yr 11 Mathematics C, by far the largest number in the history of the school. Talking to other teachers at Mathematics C panel meetings, the anecdotal evidence seems to be that Mathematics C is experiencing a growth in numbers. Possibly this has to do with the mining boom and the fact that many students see Engineering and the Sciences as good career prospects.

### **Has the assessment model affected student participation levels ?**

- By and large the answer is NO, though many would understand the system better if there was a reduced emphasis on CAJ

## **3. The ability of assessment practices to support valid and reliable judgements of student outcomes**

To a degree, I have addressed this issue above. As a general rule, I believe that the moderation system we have in place, where schools decide the rank order of students and this rank order is then moderated at meetings in both February (for Yr 11) and in October ( for Yr 12), has proved successful.

The issues that I see with this system include the following:

- There is often a reluctance of teachers to join the various panels eg I have not been able to convince any teacher of Mathematics A to join this panel and the teacher on the Mathematics B panel has decided to take a break after about 8 years on this panel. One reason for this is that in the previewing of other school's assessment is a time consuming task undertaken in the teacher's own time. I realise they are paid for same but the time factor is considerable. In addition, the meetings can be stressful, as one has to pass judgement on the work of other schools.
- The three criteria of KAPS, MAPS and CAJ have a large number of dot points/descriptors and it is difficult to internalise all of these when marking student work.
- Over the years, there seems to be a changing emphasis on some of these dot points eg in all three subjects one key descriptor in the MAPS criteria concerns the "effect of changing assumptions". Panelists seem to have different interpretations how often this dot point needs to be addressed for a student to be considered as an A in this criteria.
- The myriad of tick sheets that schools use in both KAPS and MAPS is difficult to follow. I often wonder what system schools use to arrive at the standard in these criteria and would their decisions be consistent if done on a different day/time.

### **Do the current assessment practices support valid and reliable judgements of student outcomes?**

- My belief is that the answer is YES. However, schools should not be pressured into adopting a tick sheet methodology as opposed to the use of marks on both the KAPS and MAPS criteria.
- I realise that there are some dot point/descriptors in both KAPS and MAPS that cannot be addressed using marks but this not a sufficient reason to ignore the use of marks.
- The CAJ criteria has long been a "bone of contention" with almost all teachers. They find it subjective at times and would be happy with a reduced emphasis on same or its elimination/incorporation into the other two criteria.
- With some of the higher order dot points/descriptors in the MAPS criteria, there needs to be greater clarity as to what is acceptable for a student to have addressed this particular descriptor.

### **Conclusion and External Exams**

I have tried to address the three (3) issues referred to in the terms of reference of this inquiry. One further point needs to be made and this concerns the **return to external exams**. The teachers of senior mathematics at Sunshine Beach SHS are adamant that **this would be a retrograde step**. If there are issues with the current assessment system, which I admit there are, then this can be rectified within the present constraints of an internal moderation system.

All of the twelve Senior Mathematics staff have taught in range of small and large schools across Queensland and feel that a return to external exams will only disadvantage those students in smaller regional and rural schools. It is a simplistic solution to a more complex issue.

A handwritten signature in black ink, appearing to read 'S. Ryan'.

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