SMC&PA Submission 47
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Education and Innovation Committee

From: Chris Meimaris - [redacted]
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To the Chairperson
Education and Innovation Committee

I refer to the invitation to make submissions to the Committee on assessment methods used in Mathematics, Chemistry and Physics in the senior years of high school. I am a parent of 7 children. Two have completed year 12, one is presently in year 12, one in year 11, one in year 9 and the other two are in primary school. Over the past 8 years, I have seen my children struggle to understand what is required of them to attain good grades due to the highly subjective nature of the grading systems used in high schools.

I fail to see why there is so much “normalising” required in determining the overall rank of a student. My understanding is that the criteria sheets developed for assignments and exams are written by teachers at each school to properly test the understanding children have in their subjects. Once the students submit their work, it is included as part of a folio to assess their overall performance. The work is also reviewed by a Panel consisting of teachers from various schools. The students are then subjected to a further exam (QCS) to further assess and rank the schools. There are at least 3 subjective assessment processes to arrive at a student's final grade. Why do we need 3 processes? Why require students to be coached for 2 years for the QCS exam that ranks schools relative to one another when their work is being sent to a Panel that should do the same thing? Why should the overall mark be based on a folio and an opinion on how well the child went instead of some more objective measure?

It seems a tremendous waste of effort to have scaling within a school to determines a child’s position relative to its peers, Panel moderation to assess the quality of the examination material set by the individual schools and then a further QCS exam to rank the children between schools. There must be a better way to do this. Whilst I do not advocate a final exam that all students should sit as this can be very stressful, perhaps a series of 4 external exams may suffice.

An example of how confusing this qualitative approach is for students and parents can be found in the Relevant Publications relating to the Public Briefing by the QSA held on 20 March. I understand that this report was given a grade of A. A brief scan of the report reveals numerical errors, errors in references, no explanation of the results in the Results section and averaging of data prior to plotting thereby making the correlation coefficient incorrect. The assignment appears to be more appropriate for an investigation of curve fitting in mathematics instead of the physics of heat and damping in a squash ball. I cannot see how any teacher can objectively discern between the criteria for a grade of A or B with just 1000 to 1500 words but asking the student for more than 1500 words would be onerous on the student and on the teacher. Even though the detailed criteria sheet gives a veneer of objectivity, it is based on 45 subjective sub-criteria and hence the final assessment can only be subjective. One must ask, why does data have to be presented “innovatively” for an A instead of “appropriately”? This is a year 11 assignment, not a Master’s thesis report. Furthermore, if there are numerical errors in the data presented in the report that are obvious, how can the report be of an A standard? Apparently, accuracy is not important to the examiner as it does not feature in the assessment criteria, yet accuracy is critical in scientific experimentation.

I see the value in doing experiments and providing reports for review in physics and chemistry as this is part of the role of a scientist or engineer. However, the assignments should only count for a small percentage of the final grade as they are assessed subjectively and hence may be influenced by teacher biases either related to individual students or in comparisons between schools. The training for report-writing can also be done by marking or commenting on the reports provided for class-time experiments. I see no value in having assignments for students of mathematics. Exams and quizzes should be used instead to give an objective assessment of the student’s abilities. Exam questions in all three disciplines should have a correct answer. In a recent physics exam, my son had to assess which of two students had a better understanding of physics given their explanations of an event, both of which were wrong. Why ask such a question? How is a student supposed to assess this “understanding”. Instead, the exam could have asked the students

to correct the statements and a mark given for each correction. This would turn a subjective assessment into an objective one.

When I entered engineering at university, both Maths 1 and 2 were compulsory (equivalent to Maths B and C). Now, the universities in Queensland have dropped the requirement for Maths C because there are insufficient students taking the subject. The non-Maths C students then have to do a special catch-up course once they get into first year and then they are always behind the students who did do Maths C. One may argue that this is a consequence of many more students doing engineering than there were 35 years ago. However, if the students are intending to do engineering, why are they not taking up Maths C in year 11? Even if they only decide late in year 12, why did they not pick Maths C in year 11? Clearly, the teaching of maths in years 8 to 10 is not encouraging students to take Maths C in years 11 and 12. Some sort of change is required because the colourful books, the emphasis on assignments and qualitative understanding, and the subjective methods used to mark both assignments and exams is not yielding the right result of more students taking up sciences.

Regards,

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