

8th May 2013

## **Submission to The Education and Innovation Committee**

1. I am a father and grandfather who has tried to have a meaningful hands-on role in supporting my family as they confronted the demands of the education establishment in Queensland over many years. As a scientist I am appalled at the woeful deterioration of the education system in Queensland and in particular, what seems to be the dumbing-down of our students studying any of the science subjects at the senior level but especially mathematics, physics and chemistry. This deterioration is being masked by an assessment system which I can only describe as bizarre.
2. These science subjects are precise in their nature requiring the teachers to impart to the students the nicety of the fundamental laws that apply. There is no need to set assignments that require the students to write long and involved essays often dealing with social issues with barely a nexus to the sciences. (For instance, I recently tried to help a grandson with an assignment on the chemistry of plastic (PET) drink bottles. The most successful students spent most of the essay describing the waste disposal of plastic bottles; my grandson who described the complex organic chemistry in the manufacturing process, as required, quickly learned that there is little point in being on topic, better to waffle)!
3. Throughout my academic and professional life I have relied upon percentage scores to realistically assess standards of achievement in tests and formal examinations. The current student report cards are almost meaningless with their gobble-de-gook that the bureaucratic educationists dream up. I suspect that a great deal of inadequate understanding of the sciences by some unfortunate teachers who have themselves come up through the impoverished system, leads some of them to support the current foolish marking system because it is non-confronting.
4. Massive assignments in the sciences at Senior level are ill-conceived and tortuous for time-stressed students. As implied in (2) above Senior students need to be equipped with a sound knowledge of the laws, principles and rules governing all aspects of the pure sciences and such knowledge can be tested precisely and accurately with focused test questions that can be clearly "marked" so that the student knows where he or she stands. Deficiencies can be remedied more easily by the student once they study the marked paper. Also they are then on an equal footing with their peers which is not the case when teachers turn to qualitative (or whimsical) marking of long-winded generalist essays.

5. Also, long winded essays as assignments can be done by any outsider (as in the case of English, history and social sciences). It is essential to have a fair marking system (ie based on percentage outcome for standard science questions and mathematical problem solving). Results can then be seen to be fairly applying to competitive application to University entrance etc.
6. The undue and unrelenting demand on senior students in Chemistry , Physics and Mathematics to undertake a massive number of wordy assignments is a travesty. It may comfort some poorly trained science teachers to feel busy qualitatively “marking” these assignments to a bureaucratic “pro forma, but it undermines the proper teaching of science and mathematics as precise, non-verbose specialties. Also the appalling amount of time spent on the internet to meet the long-winded assignment requirements could be much better used, even in a modicum of physical exercise.
7. To reiterate, mathematics, chemistry and physics are based on laws commonly set out in short-hand equations. These are best learned through homework practice following in-school experimentation and tutoring by competent teachers. Reference to any decent text books on these subjects highlights the fact that each has its own form of non-wordy shorthand!
8. Calculators are overused. Children are being short-changed if they are destined never to be able to do basic maths without having to use a calculator.
9. The education process in the sciences appears to be profoundly “wooly”, subjective and tainted by off-topic controversial social issues. Schools should face State-wide uniform examinations at Senior level in Mathematics, Chemistry and Physics with a simple marking system that throws up results as percentage outcomes. This would provide a fair and real benchmark for the students themselves, their schools, tertiary institutions and employers. and ensure consistency and fairness across the state.

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