

## **Brief Minutes of Meeting of concerned teachers and parents. Mathematics and Science at High School**

Cairns: JCU Campus Building A21.001 17<sup>th</sup> May 5pm

Organised by Professor Peter Ridd  
School of Engineering and Physical Sciences

### **25 Attendees**

- (1) Prof Peter Ridd spoke about problems with assessments and EEI's. In particular the difficulty in implementing the non marks based assessment and the gross length of time associated with EEI's. He is also worried that Physics and Chemistry have become almost defacto English classes due to the over-reliance on writing tasks for assessment. He stated that there seems to be a large number of teachers and parents who have significant issues with the present Queensland Studies Authority syllabi and assessment policies especially in Mathematics B and C, Physics and Chemistry.

He stated that previous efforts to get the QSA to change had not been successful but that with a new government in power it was worthwhile having another try

- (2) David Godwin (maths and Physics) spoke and presented a paper summary of his opinions

Physics, Chemistry and Mathematics B and C in Queensland Schools  
-a personal perspective      17 May 2012

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Before my time here at JCU where I have taught first year Mathematics, Physics, Chemistry, Statistics, and Education subjects, I was a teacher at St Augustine's College Cairns. There I taught mainly year 11-12 Maths B and C, Physics and Chemistry. Since then I have tried to keep in touch with what's been happening in high schools in these subjects.

Please correct me if I am wrong, but I believe the following to be features of the present scene:

- i) There is a very serious shortage of qualified Maths, Physics, and Chemistry teachers, to the extent that, in some schools these subjects are being taught by teachers whose expertise is elsewhere.
- ii) At least one large Cairns high school may not be able to offer Maths C and Physics in the near future.

- iii) Systematic teaching of content has been largely replaced by contextual learning, driven by extended experimental investigations, or assignments (major writing tasks), as required by the curriculum. The students are expected to acquire the knowledge of content and the key concepts incidentally as they work through the tasks.
- iv) Teachers now have an extremely high workload due to the demands of managing these investigations and writing tasks.
- v) These investigations and writing tasks are used directly for assessment, even though there are very few controls on the outside assistance the students may access. One can only wonder at the extent that this lack of controls compromises the assessment process.
- vi) Students undertake these tasks with inadequate background knowledge, encouraging them to seek whatever outside assistance available to them.
- vii) Marks have largely been replaced by grades in assessment.
- viii) Significant numbers of qualified and experienced teachers are leaving senior Maths B and C, Physics and Chemistry to teach in other subjects or levels, largely because of the increased workload and lack of clarity in the new regime.
- ix) Boys and students from lower social-economic situations are being dis-advantaged, with many capable students now avoiding Maths B and C, Physics, and Chemistry.
- x) Some students are being counselled to change from Maths B to Maths A so they can get a better OP.
- xi) Many school leavers now commence university studies in Science and Engineering with the appropriate pre-requisite qualifications on paper, but lack the actual knowledge and skills to complete their chosen course.

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I feel sorry for the capable young people who are being limited because the present school system cannot deliver them the teaching they need to allow them to proceed towards their chosen profession, and realise their dreams.

But I do not in any way blame the teachers for that situation, being caught up in the endless paper-work and other less clearly-defined demands of managing the writing tasks and by the complex assessment protocols required of them.

Mathematics, Physics, and Chemistry are complex enough in themselves, and represent major cultural achievements over hundreds of years that we try to communicate to our students over a very limited time-frame. This is not possible if we have to allow much of the learning to proceed incidentally and by chance.

I believe major changes are needed in the way Mathematics, Physics and Chemistry are delivered to students in Queensland high schools if these subjects are to survive into the next generation as areas of serious study in schools.

There is also the strategic need for our society to continue producing its own engineers, scientists and science teachers. This professional preparation can not only be left to the universities, its foundations are in what a child learns during his/her formative years at school. I understand that quite a few Queensland universities cannot fill their Science and Engineering places even now, and that retention rates are low. If nothing changes in high schools, I believe this situation will only get worse.

I believe that it is up to us, and others of like mind, to decide what should be done, and to communicate it clearly and specifically to those responsible in Government and the Queensland Studies Authority.

Assoc Prof Mike Liddell then spoke and raised similar concerns to those above about the Chemistry syllabus. He has particular concerns about EEI's

Discussion from the floor continued for about half an hour with all teachers' comments raising concerns. One particularly interesting graph was shown by one teacher that plotted the reduction in the results from the QCS test over the last 6 years. This showed a steady reduction until 2011 when the QCS average was down by 25%.

**A final resolution was a call for an independent review of QSA assessment systems**