SMC&PA Submission 255
Received: 13 May 2013

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13 May 2013

Education and Innovation Committee
Parliament House
George Street
Brisbane QLD 4000

Submission re:
Assessment of senior maths, chemistry and physics in Queensland schools

Dear Committee Members,

The Australian Family Association (Qld) supports urgent reforms to overcome major deficits in the validity and reliability of assessment of senior maths, chemistry and physics in Queensland schools and the removal from the Queensland Studies Authority (QSA) of responsibility for assessment and related functions. We strongly support the reform efforts and proposals of Professor Peter Ridd.

Our submission details with reference to the three Terms of Reference –

- the **invalidity and unreliability** of the QSA's assessment methods;
- the serious **negative consequences** of the QSA's assessment grading methods, including low academic standards and outcomes, demoralisation, cheating, time-wasting and student/teacher drop-out from these subjects;
- academic **references and evidence** supporting our submission, including an analysis of Submissions 1-70 published on the inquiry website (Attachment 1);
- consideration of various individuals and organisations having **vested interests** in the continuation of the current flawed QSA system;
- **recommendations** to address the Terms of Reference.

If it would assist the Committee in any way, the two researchers who advised the AFA in relation to this submission, Mrs Tempe Harvey and Mrs Anita Bailey, are available to appear in person before the Committee.

Yours sincerely,

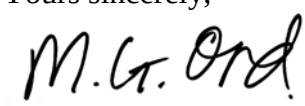

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TABLE OF CONTENTS

Page

Attachment #		**How relates to Submission**		
		Term of Ref	**Part**	**Topic**
1	**Submissions Analysis:** 80% oppose QSA methods	Teacher support	1.1	Teacher concerns with QSA assessment
2	**Survey:** Maths/science assessment			
3	**Tutor Adverts Online:** To 'complete' assignments etc.	QSA assessment neither valid nor reliable	3.1(a)	Not students' own work
4	**QSA Criteria 'Standards':** Maths C		3.1(c)	Not reliable measurements
5	**Test paper:** Marked 'D out of C'			
6	**Profile sheet:** Matching the Test Paper			
7	**QSA Maths Workshop 2009:** Correct answers scored 'B, C or D'			
8	**QSA Chemistry marking guide:** Teachers forced to mark students down			
9	**Western Australia:** Assessment overview		3.4	WA system provides valid/reliable assessment
10	**Articles:** 'Direct Instruction' success stories		3.4(d)	Direct teaching = regular skills tests, not flawed QSA 'continuous assessment'

INTRODUCTION

On 14 February 2013 the Legislative Assembly of Queensland requested the Education and Innovation Committee to inquire into and report on the assessment methods used in Senior Mathematics, Chemistry and Physics in Queensland schools.

The Committee is required to consider the following terms of reference –
• Ensuring assessment processes are supported by teachers (Part 1 below)
• Student participation levels (Part 2)
• The ability of assessment processes to support valid and reliable judgments of student outcomes. (Part 3)

The Committee has called for public submissions, which are due by 13 May 2013. The Committee is to report back to the Legislative Assembly by 16 August 2013.

ABOUT THIS SUBMISSION

A valid and reliable assessment system is vital for Queensland schools and the well-being of students and teachers alike. The disciplines of mathematics, chemistry are enabling subjects for a wide range of reasons. Mathematics, also called a mathematical science, falls within the category of science in most educational faculties. This document will refer to mathematics, chemistry and physics as maths/science for brevity.

The aim of maths/science subjects should be to afford all citizens high-level numerical and science knowledge to manage financial affairs and make healthy lifestyle choices. Vocationally speaking, these subjects should equip students for business and trades such as carpentry, electronics, and technically-demanding professions such as medicine and engineering. While some educational theorists astoundingly argue that a school subject should not even take university-preparation into account,[1] the more advanced the level of valid knowledge taught and tested, the more the student is prepared for all walks in life, regardless of university aspirations. Moreover, these cognitive subjects are inextricably linked to individual and societal prosperity.[2]

This submission was prepared for the Australian Family Association with assistance from AFA legal issues research officer Mrs Tempe Harvey LLB.Hons, LLM and independent researcher Mrs Anita M. Bailey BDentSci, GradDipEd, (internationally published science researcher and member of the Australian Institute of Medical Scientists).

TERMS OF REFERENCE

1. Do teachers support QSA assessment?

1.1 Teacher concerns with QSA assessment

Many teachers oppose the assessment methods of the Queensland Studies Authority **(QSA)**. The QSA is a statutory authority whose 20-member body determines assessment methods for Queensland schools from Prep to Year 12.

The QSA's assessment methods are set out in their approved syllabuses for senior Mathematics (A, B & C), Chemistry and Physics and related documents.

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[1] Forum of experts. (2013, May 1st). Public videocast of forum for Inquiry into Senior Math, Chemistry and Physics in Queensland schools. Archived recordings of Parliamentary briefings.
[2] Hanushek, E., & Woessman, L., (2010). *The Economics of International Differences in Educational Achievement*. Discussion Paper No. 4925. *Hoover Institution, Stanford University, University of Munich, Ifo Institute, CESifo and IZA*

There is strong and widespread teacher opposition to these methods including from senior teachers of those subjects, as evidenced by –

- **Teacher protest meetings:** These have been held in 2009,[3] 2012[4] and last month;
- **Teacher/QSA meeting:** The director of the QSA, Peter Luxton, agreed to meet with teachers (2010), including the science researcher of this submission, after requests made by Professor Ridd on their behalf. The director refused to permit Professor Ridd to attend, claiming that because he was not a teacher, he was not welcome. The director and more than ten high-ranking QSA staff attended, including Wayne Stevens, Theo Clark and Janice Chee, yet QSA failed to act on the most serious issues facing teachers: being forced to use invalid assignments and grossly unfair, unreliable letter-marking with myriad criteria in 'standards' matrices.[5] Furthermore, they were warned, as recorded in the notes taken, that biases were being noticed on a large scale against male and ESL (English as a Second Language) students. Instead, they only managed to confirm that they would make a recommendation to reduce the word count of assignments and to upload more assignment exemplars online.
- **Teacher submissions:** around 80% of published submissions (numbered 1-70), mostly from teachers, oppose QSA assessment methods, see **Attachment 1 (Submissions Analysis)**;
- **QIEU Survey:** The Queensland Independent Education Union dated 5 March 2013 stated that: "A significant number of Maths and Science teachers have ... highlighted concerns with implementing QSA requirements.."[6] The results showed dissatisfaction with how teachers must reach the final exit-grade for students. Less than a third of maths-science teachers believe that the QSA processes give an accurate grade or placement for their students. This is a disturbing concern for teachers and society as a whole, given the high-stakes impact of final grades on Resumes or pre-tertiary ranking and the opportunities for careers in medicine and other professions, regardless of which TAFE, university or job is applied for, in Qld or interstate.

- **Online survey:** In 2012, an informal online survey was conducted by Anita Bailey and various private researchers covering a cross-section of teachers, students, parents and other individuals reaching many regions of the state on the website word press. It showed consistent rejection of the marking criteria and assignments, regardless of whether the teachers (or parents or students) were associated with public or independent schools. Although a large percentage (78%) disapproved of the assignments, when faced with concluding whether a test was fairer than an assignment, the percentage rose to 90%. This suggested that some would tolerate assignments, yet admitted that they were less valid measures than objective tests. This was an informal, pilot survey to obtain preliminary information. See results in **Attachment 2 (Survey on Maths/Science assessment)**.

[3] Ridd, P. (2009) *Report on Maths, Physics and Chemistry Teacher Meeting, 21 November 2009*. PlatoQld. Retrieved from: Click on 28.01.10 http://cmstest.jcu.edu.au/qssc_pollux81_jan/general/index.htm
[4] Submission 28, (2013) Dr Matthew Dean, part 2. Qld Parliamentary Report
[5] Ridd, P., PlatoQld connected teachers (2010, Jan 19) *An abbreviation of concerns raised by mathematics teachers at the QSA meeting.* Posted by the attending group of concerned teachers, academics and parents. http://cmstest.jcu.edu.au/qssc_pollux81_jan/idc/groups/public/documents/presentation/jcuprd_055498.pdf
[6] Independent Teachers Union. (2013, May). IEU-QNTB survey of assessment and moderation processes. Retrieved from: http://www.qieu.asn.au/files/1013/6238/1739/Subject_specific_responses_QSA_Survey.pdf

Teachers' central objection is that the QSA's assessment methods are both invalid and unreliable and this has serious negative consequences for students and teachers alike. Submissions to this inquiry evidence how QSA methods result in –

- Invalid, unreliable assessment;
- Cheating as assignments are often not the students' own work;
- students/teachers stressed over time wasted on irrelevant and unproductive tasks;
- loss of valuable teaching time lowers academic standards;
- children marked down despite correct answers;
- inaccurate and confusing marking.

1.2 Teacher drop-out

Anecdotal evidence and testimony to this inquiry strongly suggests that maths/science teachers are resigning or leaving Queensland.[7] [8] Furthermore -

- The QTU published an Australian Education Union nation-wide survey entitled 'State of Our Schools'. It was described as "worrying reading for Queensland parents." The results showed all states on teacher hiring problems. The results were startling. After Tasmania, Queensland had the highest proportion of high school teachers being *forced* to teach *without being fully qualified in their subjects*. That is, maths and science programs (at the top of the list) are being taught by a massive 73% of teachers outside of their expertise.[9] This is a travesty, which can not be overstated.
- One cannot help but draw a link from the QIEU survey results above and the mass anecdotal reports of teachers leaving the Queensland system due to a flawed assessment system. The QTU survey also concluded, "Queensland has one of the nation's worst teacher supply problems, with 72 per cent of Queensland principals saying their school had experienced problems finding teachers in the past year, second only to the Northern Territory."
- There is government recognition of a state-wide maths/science teacher shortage[10] [11]

1.3 Vested interests

In considering evidence of teacher support for the QSA assessment methods, the significant vested financial and career interests of those supporting the QSA system must be taken into account -

- **Current and aspiring QSA panellists:** The holding of QSA panel positions are viewed as a career pathway by many, to jobs in the Education Department, in academia or in schools. It is generally considered that schools benefit by having their teachers on these panels;
- **Speaking out against QSA methods may be a job risk:** Significantly, the five (5) QSA panel submitters who names are suppressed were among the nine (9) panellists whose submissions (up to Submission #70) opposed the QSA system, yet all of the six panellists who wrote in support of QSA provided their names;

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[7] PlatoQld (2013) platoqld.com
[8] Submission 18. Merv Myhill, attachment (2013) to this inquiry
[9] QTU (2010) "Survey highlights cracks in state school system", *Queensland Teachers*, Vol 33 Number 1, p.12.
[10] Chilcott T. (2013 Jan 5) Queensland Government rejects federal training drive to stem teacher shortages in maths and science. http://www.couriermail.com.au/news/state-rejects-teacher-training-drive/story-e6freon6-1226236936449
[11] DETE (2013, May 1) **Scholarships open different pathways** 'Science, mathematics and engineering teachers are in high demand across Queensland,' Mr Langbroek said.

- **Education academics and employees at education departments:** Many, Queensland university academics have made careers out of the new pedagogies used by QSA (such as combining child-directed learning with assessment tasks) and they have a vested interest in maintaining the status quo;[12]
- **Past contributors to QSA assessment documents:** Others have been deeply involved with the QSA methods, such as a submitter who had been on the committee writing the current senior chemistry curriculum, which includes assessment rules;
- **Education Department and QSA employees:** Their jobs may depend on changes to the current overly-bureaucratic assessment system. Moving to a simpler system used in other Sates would involve axing around 4000 QSA panellist positions by moving to a more efficient system of moderation through external exams.

Without in any way impugning the motives of any submitter or other person supporting the QSA's assessment methods, any potential conflict between QSA support and the financial or career interests of those expressing it should be taken into account by the Committee.

2. Student participation levels (senior maths/science)

2.1 Student concerns with QSA assessment

QSA assessment requirements impose on students time-consuming assignments, a confusing marking system and an array of irrelevant assessment criteria.

For example, a former Year 12 (2012) Maths B, Physics and Chemistry student was fearful of failing physics because her English writing ability was being assessed instead of physics.[13]

Even if the QSA's onerous and unfair assessment requirements were replaced with a perfectly valid and reliable system, Queensland students have another reason to think twice about taking on senior maths/science subjects. There is uncertainty in the community about whether these academically difficult subjects are fairly weighted against easier subject for the purposes of arriving at a student's OP (Overall Position) Score.

As Ms Tracey Mossop wrote, in her letter to *The Courier*-Mail on 11 May 2013 in response to that newspaper's front-page report that record numbers of students without an OP were offered tertiary education places in 2013 amid a rise in Year 12 students taking the non-traditional path to university –

> "Questionable OP results must be contributing to the decline in numbers sitting for them. Two years ago my son, who did an equivalent of straight maths/science, received an OP four points less than a friend's daughter who was tutored in ordinary strand maths and did "arty type" subjects. She could not use her OP to do the same degree as my son, and dropped out of her double degree. This is an indictment on the system, and the choices now being made."[14]

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[12] Vested interests: See also Kevin Donnelly's remarks in Appendix 9; Dr Stephen Norton discusses the advantages of being a constructivist academic Submission 30, p23.
[13] Student, Submission 22 (2013) to this inquiry.
[14] This letter was written in response to the article quoting Minister Langbroek, *Record Queensland school-leavers without OP offered tertiary education places this year*, The Courier-Mail, 10 May 2013: http://www.couriermail.com.au/news/queensland/record-queensland-school-leavers-without-op-offered-tertiary-education-places-this-year/story-e6freoof-1226638935426

2.2 Student drop-out

According to QSA's data for the period 2002-2012 tabled at this inquiry[15] -

- Maths B enrolments have generally declined since 1999 (enrolments currently around 20% of students)
- Maths C enrolments have flat-lined since 1999 (less than 10% of students enrolled)

Anecdotally, teachers and parents say students are dropping out of Maths B because of the unreasonable written assignments required by QSA. It seems that students dropping Maths B are transferring to the easier Maths A.

According to QSA's data[16] for students finishing Year 12 in 2012 –

- around 25% of enrollees failed to complete Chemistry;
- around 25% of of enrollees failed to complete Maths B;
- there was a corresponding rise in enrolments for the easier Maths A.

There is no apparent reason for the omission of Maths A enrolment figures for the last 10 years from QSA's tabled enrolment data.

3. Are student outcomes validly or reliably assessed?

The QSA has invented a multiply-flawed grading system of incredible complexity involving three (3) invalid and unreliable processes – much like a wobbly three-tiered cake - for marking, moderation and scaling. These will now be explained in Plain English.

3.1 School marking

QSA requires that an internal school grade[17] first be reached by the following process.

a) Teachers must use tables of irrelevant paragraphs -
   - also called criteria-standards tables or grids, matrices or rubrics, as described by Dr Dean;[18]
   - compliance with paragraph requirements earns students a letter between A-E;
   - the highly subjective[19] A-E requirements can be satisfied with wrong answers or not satisfied with correct answers;
   - **QSA assessment is clearly invalid** to the extent it awards a letter for a wrong answer or for outcomes in other irrelevant disciplines such as bibliography writing, in-text referencing, computer graphics, use of technology such as calculators (i.e. a machine to do the maths for the student);

b) Teachers must allocate these A-E letters –
   - for each student answer (and each test), not just at the final report card stage;
   - to <u>mark down or actually fail</u> students for <u>correct answers</u>;

c) Teachers cannot "add up" the A-E letters in a logical way, therefore the same result is not guaranteed with different markers;

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[15] QSA, Tabled Paper, Qld Parliament, 7 March 2013, Enrolment Data, pp1-5.
[16] QSA, Tabled Paper, Qld Parliament, 7 March 2013, Enrolment Data, p6 (p11 of tabled paper).
[17] Formally called Subject Achievement Indicators or SAIs.
[18] Submission 28, (2013) Dr Matthew Dean, part 2. EIC, Qld Parliamentary Report
[19] The subjective nature of these criteria in maths is beautifully illustrated by Doug Goldson, see his Submission 1, Figure 1 on p.3.

d) All school marking with A-E letters therefore **fails to assess reliably**;
e) Finally, school marks are regularly awarded for assessment that cannot be authenticated as the student's own work. Clearly **assessment of non-student work is invalid** -
    - QSA-mandated maths-science assignments counting heavily towards assessment cannot be authenticated as the student's work. In contrast, supervised exams are almost 100% a student's work;
    - plagiarism from the internet or other sources will go undetected, even with onerous log keeping requirements and software like 'Turn it in';
    - Apart from plagiarism, there is the insoluble problem of third party 'human' help;
    - many students and parents turn in desperation to private tutors to assist with these tasks which most children have not been academically prepared to face;
    - so widespread is the practice that Queensland tutors advertise online offering to proof read, complete, assist, prepare, support and/or review assignments in senior maths/science subjects;
    - Wording and a screen shot of numerous Queensland school tutor advertisements for these subjects are included in **Attachment 3 (Tutor Adverts Online)**.

Please refer to **Attachments 4, 5, 6, 7 and 8** to see QSA-style 'criteria paragraphs', QSA marking on a test paper and QSA instructions on how teachers must use the largely irrelevant criteria paragraphs to allocate an A-E grade. These examples show the impossibility of rationally 'adding up' strings of letters to reach a final grade.

Problem: ALL assessment marked the QSA way is potentially unreliable due to the inability to add letters up, MOST assessment is invalid as the QSA criteria are irrelevant and SOME assessment will be invalid because it is not the student's work.

Solution: The simple, effective and proven solution is to replace the QSA's invalid criteria paragraphs and A-E letter grades, with a system of numerical marking to score assessment and to aggregate those marks to arrive at a final grade.

Subjective criteria paragraphs have no place in maths/science subjects. They should be replaced with assessment-setting criteria that require right and wrong answers to objectively worded questions, based on the core maths/science content. Numerical marking is the internationally recognised standard and is used in every other Australian State.[20]

3.2 Social moderation

Queensland schools interpret the maths/science content in the underlying syllabus documents in different ways. It is almost impossible to moderate the work of students at different schools who take different assessment and cover different topics or place different emphasis on them. The QSA method of moderating differing work across Queensland involves around 4000 QSA employed teachers working on social moderation panels.

To make matters worse, panelists are judging student's work on the basis of radical and highly subjective A-E criteria, which mean different things to different people. In any event, the absence of numerical marks prevents important statistical scaling and analysis.[21]

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[20] This approach has been recommended by many submitters including Dr Matthew Dean (Submission 28) and Professor Peter Ridd in his preliminary testimony to this inquiry.
[21] ACER, Masters, G. (2013, May). *Some Reflections on the Assessment Process*. **Number 58. EIC, Qld Parliamentary Record** http://www.parliament.qld.gov.au/work-of-committees/committees/EIC/inquiries/current-inquiries/QldAssessment

Solution: Internally assessed work should be scaled by statistical (analytical) moderation against external subject-specific exams.[22]

3.3 Scaling by QCS Test

The process of the QCS Test to scale students' results up or down depending on a group result at the school is not that uncommon. However, what distinguishes the QCS test from every other set of exams used to scale results in other states, is:

a) The QCS Test is merely a multi-skills test on all topics, whether students take the subjects or not, so the questions are limited, for example maths skills tested are limited to Year 10 level. Compare a sample of QCS test questions with the 100 pages of exam questions set for physics alone in Victoria. (Would you prefer a Queensland or Victorian pilot?)

b) There are zero subject-specific exams for school leavers in Queensland. The QCS Test is the only external compulsory exam run in Queensland by the QSA board. No subject is marked against a common benchmark or yardstick for that subject.[23] An additional and important issue is that, without a common yardstick exam for each subject, there is no way of reliably adjusting (or 'recalibrating' or scaling) the internal school results.

   Scaling what might be widely varying student grades from school to school depending on the oranges-and-apples tests applied, is why such an 'anchor' exam is recommended by all involved in national and international testing.

   The failure by the QSA to employ international best practice to ensure all students have a level playing field in the highly technical subjects of maths/science is breath-taking, particularly as the final rank between students is a high-stakes ranking that may be used for lucrative job applications or tertiary entry in the most competitive fields available in either Queensland or interstate, and which could alter their future lives, earnings and fulfillment of dreams.

c) The third and final point in all this, is that, despite its numerical scaling to tweak student's internal grade, the entire QSC test is completely pointless. Why? It is closing the gate after the horse has bolted because it is tacked onto the top of an underlying mess of bungled processes.

   If the base is flawed, then the final results are flawed. Tinkering with school-grades that have been deduced based on invalid criteria, on a string of letters that cannot be added reliably, and further massaged by subjective judgments during social moderation, cannot possibly iron the flaws out the students' final school grades.

   The students' test answers must be marked validly and reliability from the ground up. Without valid and reliable foundations the whole tiered cake falls over, the house of cards collapses.

[22] Donnelly, K (2013) *External beats Internal*, www.OnlineOpinion.com.au
[23] Submission 30 to this inquiry, Norton, S (2013).

Solution: Queensland should follow the lead of other States and adopt external exams for all pre-tertiary subjects (not just for maths/science subjects). At that time, the QCS Test can be abandoned in favour of these more accurate **scaling by subject-specific external exams**. In addition, QSA should **retain the option of a 100% external exam system**, which already exists for exceptional schools and requires no scaling.

3.4 No counter-evidence justifies QSA methods

Nothing can justify QSA assessment as either valid or reliable. That is why the minority of submitters that support QSA methods have either provided –

- mere opinion but no evidence to back their claims; or
- have included academic references that do not support their claims.

The opinions and other arguments supporting QSA's methods are negated in detail in **Attachment 1 (Submissions Analysis)**.

3.5 QSA's flawed assessment breaches psychological testing standards

There are standard obligations when conducting tests with children, whether they be psychological or educational tests. Both Australian and international standards[24] [25] make it clear to avoid unnecessary processes that test anything other than the targeted information and to avoid any process that could predictably cause distress to the test-taker.

Submissions to this inquiry suggest that negative consequences for children are a direct consequence of the QSA assessment requirements. Evidently, awarding an A-E grade on individual items that indicate repeated failures (even when fully or partly correct) would demoralise, rather than encourage, students.

The solution is to return to summing up marks, as is international best practice, to provide concrete evidence of what has been achieved and to use for fair comparisons. Likewise, testing maths/science students predominantly on outside skills such as research of open-ended topics and English writing, would also raise ethical concerns and should also be recommended to be ceased as soon as possible.

3.6 Direct instruction and other elements of valid and reliable assessment

The solutions outlined above to QSA's invalid three-tiered assessment involve the essential elements of a valid and reliable grading system – **numerical marking**, **upfront assessment combinations** and **moderation** and **scaling** to a common benchmark **external exam**. Western Australian school system has these elements.

These elements are features of a system of teaching and testing known as 'direct instruction'. Under this system which most adults over 40 years of age would have experienced at school yields far more successful academic results than the child-centred approach of today.

As pointed out earlier,[26] many university academics have made careers out of the new pedagogies, in particular, constructivist approach preferred by QSA that focuses on assessment through child-directed learning tasks such as assignments.[27]

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[24] Australian Psychological Society (2007) *Code of ethics. A.P.S.* http://www.psychology.org.au/Assets/Files/APS-Code-of-Ethics.pd

[25] AERA, APA & NCME. (2007). Standards for Educational and Psychological Testing. Retrieved from: http://www.apa.org/science/programs/testing/standards.aspx

[26] Discussion on vested interests in maintaining QSA assessment, Part 1.3(c).

Under the QSA approach, children learn little as assessment doubles as a teaching method, which requires them to teach themselves. *In contrast*, **assessment** under **the direct instruction model** involves regular non-formative[28] tests that ensure students actually know what they have been directly, clearly taught by their teacher.

The evidence-backed Direct Instruction model of teaching and assessment is valid and reliable and gets results – see **Attachment 10 (Articles – Direct Instruction success stories)**.

Suggestions: To ensure all elements of valid and reliable assessment are available to senior maths/science students (and other students) –

- School students should have the **option available to them of Noel Pearson approved Direct Instruction and testing** methods, if their schools so elect;
- Queensland should **reform its assessment in line with other states, such as WA, and other countries** to ensure our students have the benefit of ALL elements of valid and reliable assessment;
- Finally, Queensland maths/science (and other) **teachers should be required to pass a subject during their training, in the rudiments of valid and reliable assessment** systems.

RECOMMENDATIONS

Significant reforms are recommended to replace the flawed QSA assessment methods in Maths, Physics and Chemistry for Years 11 & 12

1. FIX ASSESSMENT

1.1 Jan 2014: Numerical marks not letters for all assessment (exams and assignments).

1.2 Jan 2014: For exams, Criteria Sheets to be used only in their design (not for marking). Simplified Criteria sheets to ensure syllabus content properly covered with appropriate mix of easy to difficult questions in exams.

1.3 Jan 2014: For assignments, simplified Criteria Sheets that omit current irrelevant requirements are to be used in the setting and marking thereof.

1.4 Jan 2014: "Upfront assessment combinations" to be published for these subjects ie. % accorded to each assessment item must be published upfront and altered only for disclosed reasons.

1.5 Jan 2014: Assignments and Research tasks to be short and capped as a % of assessment: Maths (0%) and Physics (10%) & Chemistry (10%)

1.6 End 2015: External exam 50% in Year 12 (start 2015)

1.7 Immediately: Current 100% external exam option in most subjects to be kept going for schools like Hubbards & individual students in special circumstances. (QSA wants Hubbards 100% QSA external exams in all subjects stopped 2015)

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[27] Vested interests: See also Kevin Donnelly's remarks in Appendix 9; Dr Stephen Norton discusses the advantages of being a constructivist academic Submission 30, p23.

[28] Such tests do not count towards the final grade.

2. FIX SUBJECT CONTENT

All QSA senior maths/science syllabuses should be reformed to ensure appropriate and balanced subject content and removal of all irrelevant content, in line with Professor David Klein's recommendation attached to Submission 28 of Dr Matthew Dean.

3. FIX GOVERNANCE

3.1 Option #1: New body to supervise and bring in external Year 12 exams by 2015, with discipline and industry subject specialists and assessment statisticians on board. (QSA keeps rest of its functions).

3.2 Option #2: Dismantle QSA

3.3 Review how other states run external exams etc

4. FIX OP SYSTEM

4.1 External exams to replace QCS Test with ATAR ranking to begin.

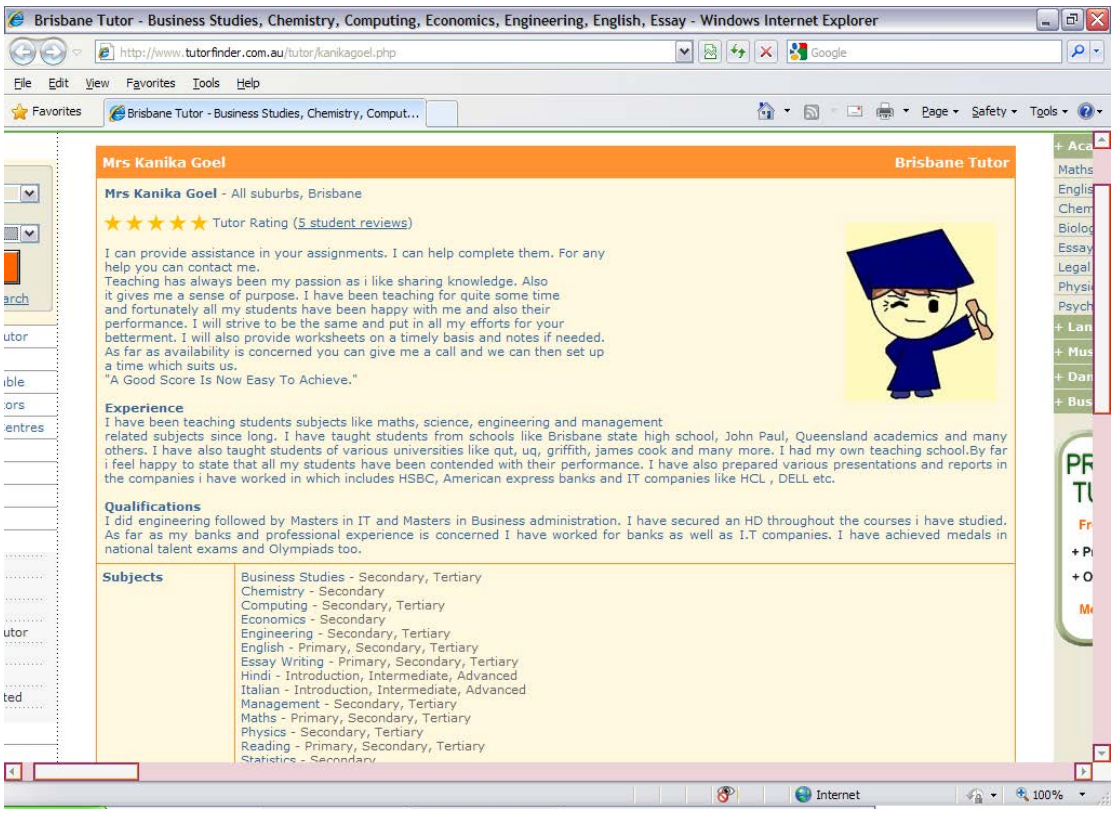
4.2 More demanding senior maths/science subjects should be more heavily weighted in ranking.

ATTACHMENT 1: TUTOR ADVERTS ONLINE - To 'complete' assignments etc.

Note: These tutors advertise to complete, assist, prepare, support and/or review assignments in Queensland Senior maths, chemistry and physics subjects. **All screen shots available on request.

Online Advert #	Location	Tutor's name	Is tutoring offered in Year 11 & 12 Maths, Physics and/or Chemistry? * * Many of the Tutors listed, offer tutoring in other subjects too	Service offered per website link (underlining added)
1	Brisbane	Mrs Kanika Goel	Maths (secondary) Physics (secondary) Chemistry (secondary)	"I can provide assistance in your assignments. I can help complete them. For any help you can contact me." http://www.tutorfinder.com.au/tutor/kanikagoel.php
2	Brisbane (Mt. Ommaney)	Mrs Vindy Hapuarachchi	Maths (secondary)	"I help students in school work, exams and assignments. For assignments I provide a step by step guide to answer the questions and help create mathematical models and analyse results. I can help in Excel and other graphing software as well. Between weekly tutoring sessions I am happy to answer my students' questions or review their work through email if required." http://www.tutorfinder.com.au/tutor/vindyahap.php
3	Brisbane (Mt. Ommaney)	Not listed	Year 11-12 Math A/B/C	"Support provided for student's requirement (exams, assignments or homework)." http://www.truelocal.com.au/business/experienced-maths-tutor-yr-6-12-brisbane-west/mount-ommaney
4	Brisbane (All suburbs)	Mrs Raminder Sandhu	Physics (secondary) Chemistry (secondary)	Professional home Tution, assignment preparation, problem solving assistance, one to one Tution Chemistry 1010,1020, understanding of concepts, laws, EEI, ER help, case studies, preparation of Quiz, tests and best performance in examinations. http://www.tutorfinder.com.au/tutor/ramindersandhu.php
5	Cairns (Northern Beaches)	Mr Matt Brown	Maths (secondary) Statistics (secondary)	Mathematics tutoring year 7 to university All levels of maths Assessment planning and reviewing http://www.tutorfinder.com.au/tutors/detail.php?TutorID=37744&SubjectID=29
6	Warner	Belinda	Maths (Yrs 11 -12)	The statement "I am also able to help students with their homework and assignments in other subject areas as required." suggests that assignment help is available in Maths. http://www.gumtree.com.au/s-ad/warner/language-tutoring/maths-science-tuition/1016052178

Mrs Kanika Goel, Brisbane – Downloaded, 25 March 2013
http://www.tutorfinder.com.au/tutor/kanikagoel.php



ATTACHMENT 2: SUBMISSIONS ANALYSIS - Opposition/Support for QSA assessment

69 submissions (#16 was withdrawn), received mostly from practicing or former teachers, were published on this inquiry's website at the time of writing is set out below. Of those submitters expressing a view either way, the QSA's assessment methods in relevant subjects were -

- generally opposed by 80% (56 out of 70 submitters);
- generally supported by 20% (16 out of 70 submitters);

The analysis was based on the submitters' self-described status, which was unstated in some cases.

#	Name	Author's self-description	Critical of QSA methods	Supportive of QSA methods	Evidence in submission that QSA methods valid/reliable
1	GOLDSON, Doug	Teacher	✓		
2	FLOWERS, Barry	Teacher	✓		
3	CAPPS, Neil	Teacher	✓		
4	Name suppressed	Parent	✓		
5	Name suppressed	Teacher, Panellist/Panel Chair	✓		
6	GOULD, Mark	Teacher, QSA District Panel Chair Member sub-committee that wrote current Chemistry Syllabus		✓	Personal opinion
7	SMITH, Jason	Teacher QSA District Panellist		✓	Misleadingly quotes Hattie and Timperley[29]
8	Name suppressed	Teacher	✓		
9	Name suppressed	Teacher, Panel Member	✓		
10	PATERSON, Rob	Teacher	✓	✓	Personal opinion
11	AUSTIN, David	Teacher, State Monitoring Panel Chair		✓	Personal opinion
12	MADDEN, David	QSA witness		✓	Personal opinion
13	HUGHES, Matthew	Teacher, District Review Panellist		✓	Personal opinion
14	Name suppressed	Teacher	✓		
15	GALBRAITH, Arthur	Teacher (?)	✓		
16	Submission withdrawn		--	--	
17	MOULDS, William	Teacher	✓		
18	MYHILL, Merv	Ex-teacher	✓		
18a	MYHILL, Merv (attach.)	Ex-teacher	✓		
19	WHALEN, Pat	Teacher	✓		
20	HILL, Robert	Teacher, Panel member	✓		
21	Name suppressed	Parent	✓		

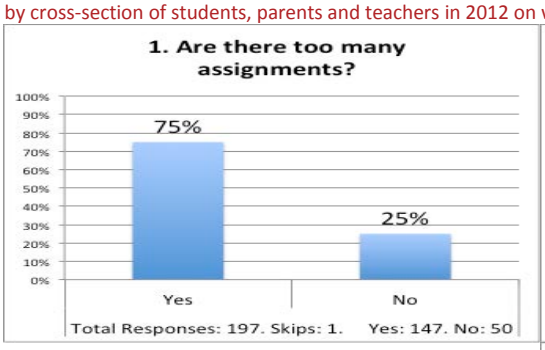
[29] **Submission 7 of Jason Smith:** John Hattie's research cited in this submission does not support grading by way of methods such as QSA 'criteria paragraphs': "One thing that is forgotten in the debate about the value of standards vs. marks, is the link between the criteria and standards, learning intent and quality teaching and learning. A well constructed set of standards sets out what we value, just as a set of criteria (or general objectives, as they are also known) identify and make clear the things that we want students to learn in the course of study. The move from a numerical marking system to one based on standards allows teachers to share the process with students and to show them what we are looking for in their work. The standards facilitate meaningful feedback to students which has been shown to be a powerful tool for improving the quality of student work." Hattie, J. and Timperley,H . (2007).
The Hattie and Timperley (2007) article does note the importance of feedback for student learning. Effective instruction should incorporate feedback that provides information helping the student to understand where they can improve. Hattie and Timperley do not link this statement to criteria based marking. It is incorrect to assume that the use of the current system based on particular criteria is better than a marks based assignment for determining grades. This is misleading and not something the authors he quotes have advocated. See also Hattie, J. (2009) *Visible learning: A synthesis of over 800 meta-analyses relating to achievement.* London. Routledge.

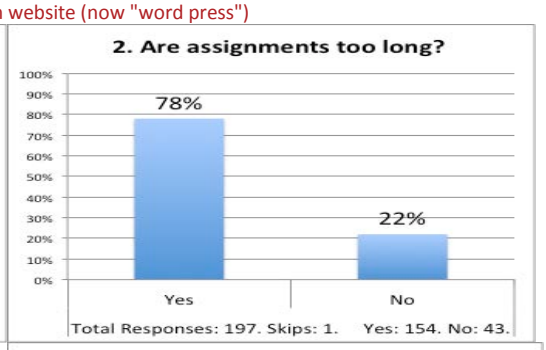
#	Name	Author's self-description	Critical of QSA methods	Supportive of QSA methods	Evidence in submission that QSA methods valid/reliable
22	EASTHOPE, Jacqueline	Student			
23	Name suppressed	Student	✓		
24	HENLEY, Elizabeth	Student	✓		
25	ROSS, Cameron	Teacher (?)	✓		
26	Qld Teachers' Union	Union		✓	Opinion
27	Name suppressed	Teacher	✓		
28	DEAN, Dr Matthew	Mathematician, Ex-teacher	✓		
29	KAZOULLIS, Stephen		✓		
30	NORTON, Stephen	Senior Lecturer, Maths Education	✓		
31	KROESE, Prof Dirk	Professor, Mathematics	✓		
32	HILLCOAT, Kyle	Student			
33	FENSHAM, Emeritus Professor Peter	and Adjunct Professor of Science Education		✓	Personal opinion
34	WATKINS, Ian	Teacher	✓		
35	SMITH, Keith	Teacher and Parent	✓		
36	REINHARDT, Greg	Teacher, Panellist, Ex-Panellist	✓		
37	SANCHEZ, Tony	Teacher, District Panel Member	✓		
38	BRAY, Professor Igor	John Curtin Distinguished Profesor	✓		
39	THOMAS, Peter	Retired teacher	✓	✓	Personal opinion
40	DEAN, Geoffrey	Retired Engineer	✓		
41	Name suppressed	Teacher and Parent	✓		
42	BLOOD, Christopher	Teacher and Administrator	✓		
43	RYAN, Steve	Teacher and Panellist		✓	Personal opinion
44	WASLEY, Barbara	Teacher	✓		
45	FRENCH, Neil	Teacher	✓		
46	FORD, Kristan	Student		✓	Personal opinion
47	MEIMARIS, Dr Chris	Parent and PhD Engineering	✓		
48	SCHMIDT, Adele	Education academic (?)		✓	Many education references
49	SANDERSON, Ian	Teacher	✓		
50	STOW, Professor Jennifer	Parent and Professor, Scientist	✓		
51	Name suppressed	Teacher, Panellist	✓		
52	BOGGS, Rex	Teacher, Panellist	✓		
53	PINK, Ian	Teacher	✓		
54	Queensland University of Technology	Authors names not shown		✓	some education references
55	BOOTH, Bronwyn		✓		
56	McILLHATTON, Stephen	Principal	✓		
57	ANTROBUS, Peter	Teacher, State Panel Chair		✓	Personal opinion
58	MASTERS, Geoff and MATTERS, Gabrielle	Australian Council for Educational Research	✓	✓	Personal opinion
59	FRASER, Craig		✓		
60	SULLIVAN, Margaret		✓		
61	O'CONNER, Brendan		✓		
62	HIATT, Richard		✓		
63	SIMONSEN, Shane	Teacher	✓		
64	Name suppressed	Teacher, District Panellist	✓		
65	Name suppressed	Teacher, Panellist	✓		
66	Name suppressed	Parent	✓		
67	GOODWIN, Ellie		✓		
68	PERRY, Leon	Retired Teacher	✓		
69	GALBRAITH, Hon. Prof Peter	Retired Teacher, and various roles	✓	✓	Personal Opinion
70	Name suppressed	Retired Teacher, HOD	✓		
Tot			56	16	

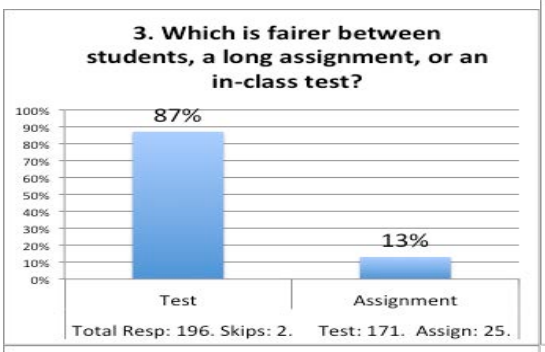
ATTACHMENT 3: PILOT SURVEY - Maths/Science Assessment in Qld

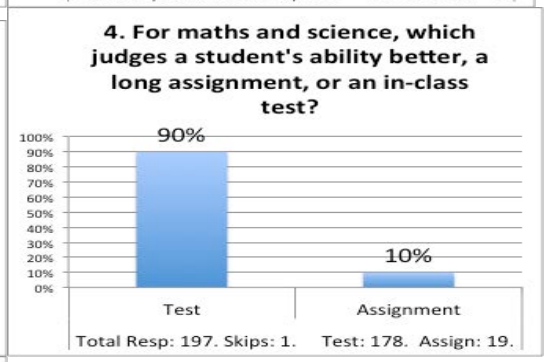
Queensland School Comment Survey

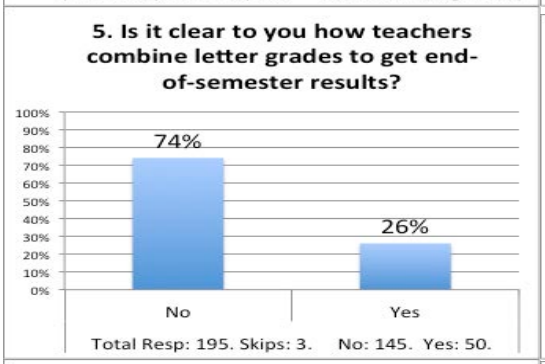
completed by cross-section of students, parents and teachers in 2012 on website (now "word press")

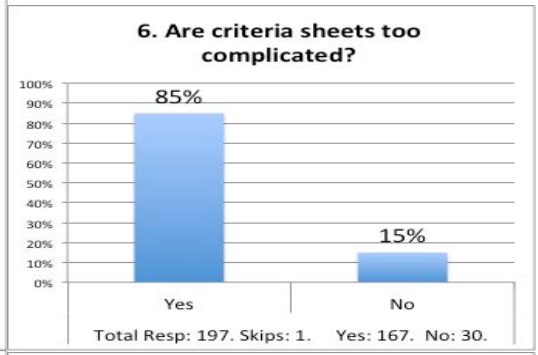


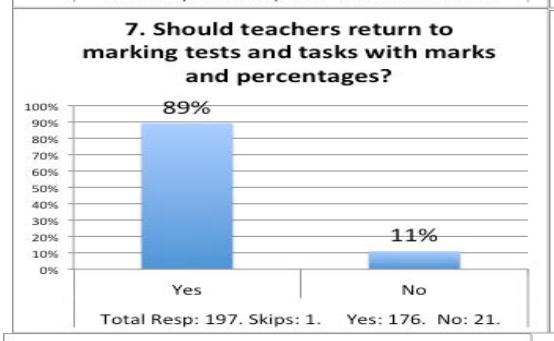


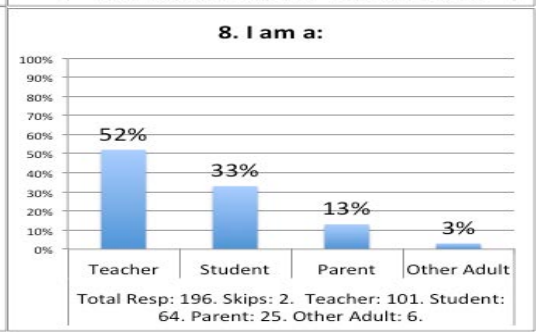


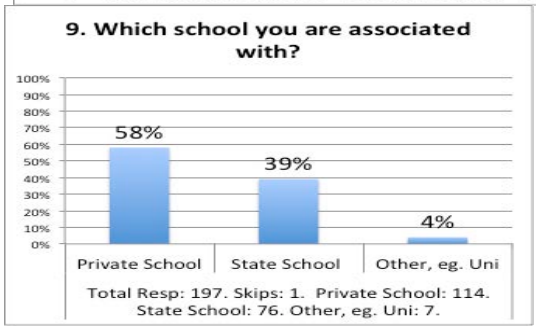






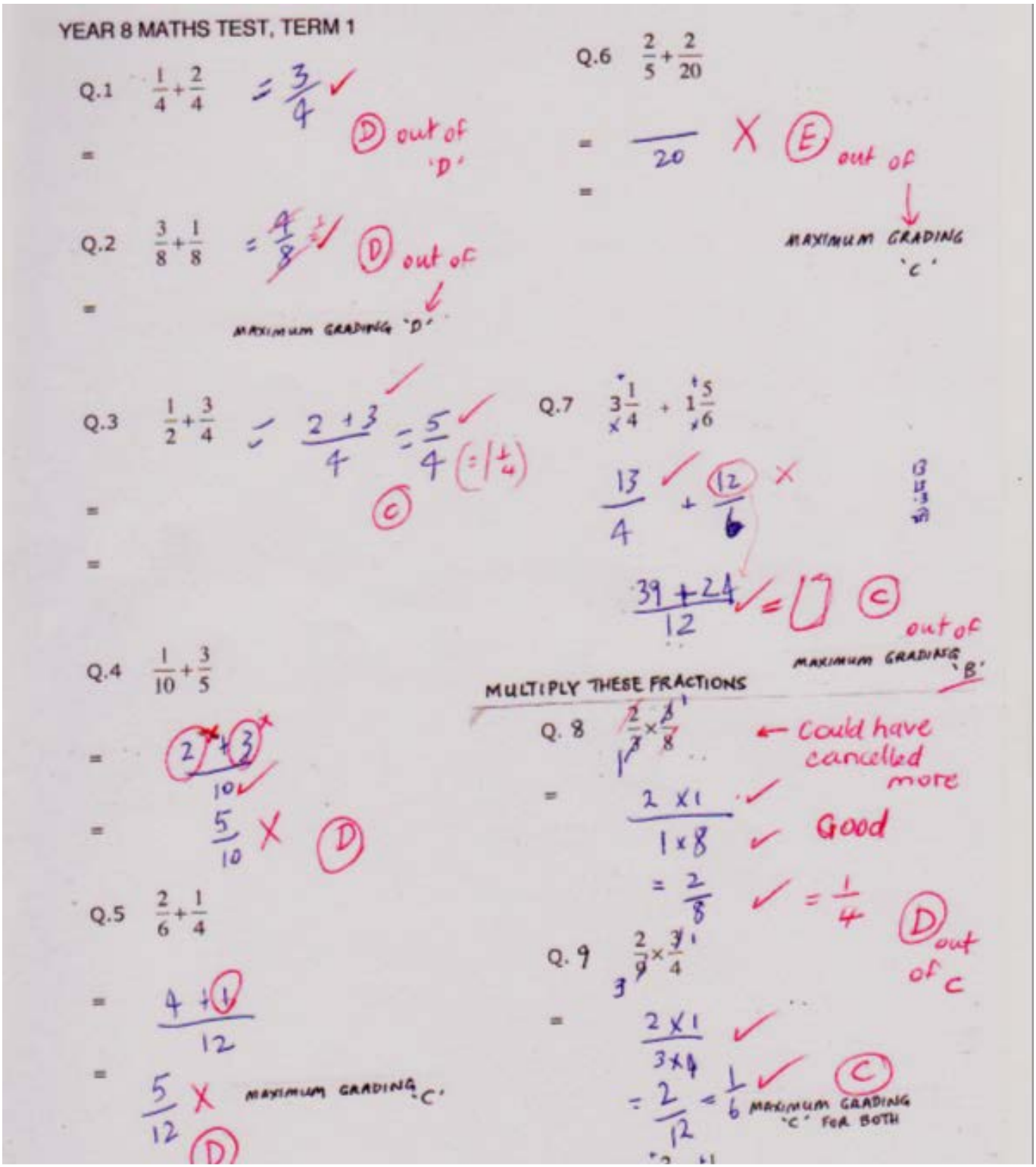






ATTACHMENT 4: TEST PAPER - Marked 'D out of C' using QSA methods

Note: The QSA's demoralising assessment is now recommended by QSA for Prep to Year 10



YEAR 8 MATHS TEST, TERM 1

Q.1 $\frac{1}{4}+\frac{2}{4}$ $= \frac{3}{4}$ ✓ (D) out of 'D'

Q.2 $\frac{3}{8}+\frac{1}{8}$ $= \frac{4}{8}$ ✓ (D) out of 'D' MAXIMUM GRADING 'D'

Q.3 $\frac{1}{2}+\frac{3}{4}$ $= \frac{2+3}{4} = \frac{5}{4}$ $(=1\frac{1}{4})$ (C)

Q.4 $\frac{1}{10}+\frac{3}{5}$ $= \frac{2+3}{10}$ ✓ $= \frac{5}{10}$ X (D)

Q.5 $\frac{2}{6}+\frac{1}{4}$ $= \frac{4+1}{12}$ $= \frac{5}{12}$ X (D) MAXIMUM GRADING 'C'

Q.6 $\frac{2}{5}+\frac{2}{20}$ $=$ ___ X (E) out of MAXIMUM GRADING 'C'

Q.7 $3\frac{1}{4}+1\frac{5}{6}$ $\frac{13}{4}+\frac{12}{6}$ ✓ (12) X $\frac{39+24}{12}$ ✓ = [ ] (C) out of MAXIMUM GRADING 'B'

MULTIPLY THESE FRACTIONS

Q.8 $\frac{2}{1}\times\frac{1}{8}$ ← could have cancelled more $= \frac{2\times1}{1\times8}$ ✓ Good $= \frac{2}{8}$ ✓ $= \frac{1}{4}$ (D) out of C

Q.9 $\frac{2}{3}\times\frac{1}{4}$ $= \frac{2\times1}{3\times4}$ ✓ $= \frac{2}{12} = \frac{1}{6}$ ✓ (C) MAXIMUM GRADING 'C' FOR BOTH

ATTACHMENT 5: PROFILE SHEET - Matching the above Test Paper

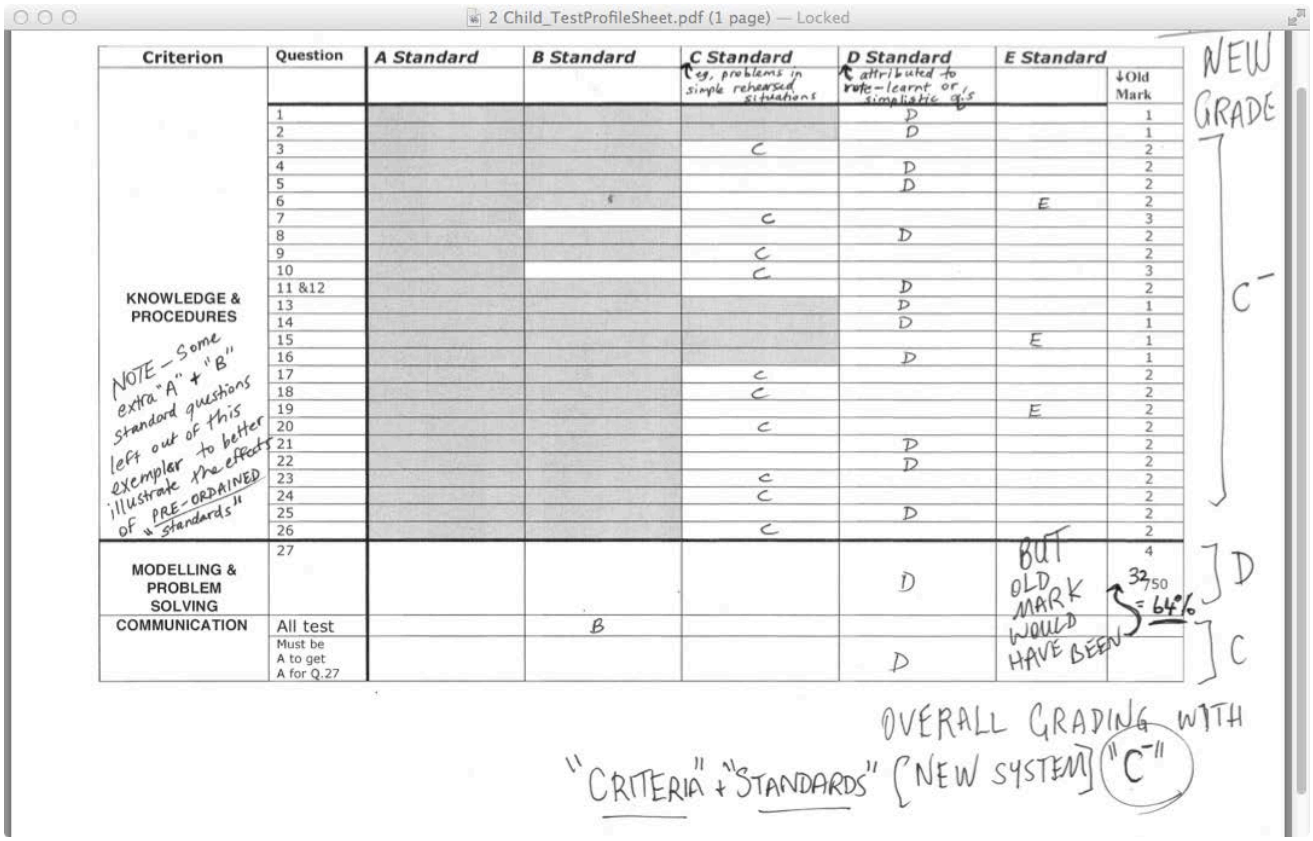
Note:

1. This profile sheet shows QSA advice to collect letters.

2. Notice teachers are forced to block off higher grades, so that students answering simplest answers are failed with Ds for correct 'D-standard' answers and failed for getting 'C-standard' answers half-correct.

3. Students do not have their marks aggregated and the method is thus fundamentally flawed as it skews the teacher's judgement to seeing more failure-standard letters.

4. The way that letters must be tallied on a 'profile' sheet can result in shocking biases whereby many correct answers of D or C standard 'pull' the child's grade over to failure when they were in fact comfortably passing.



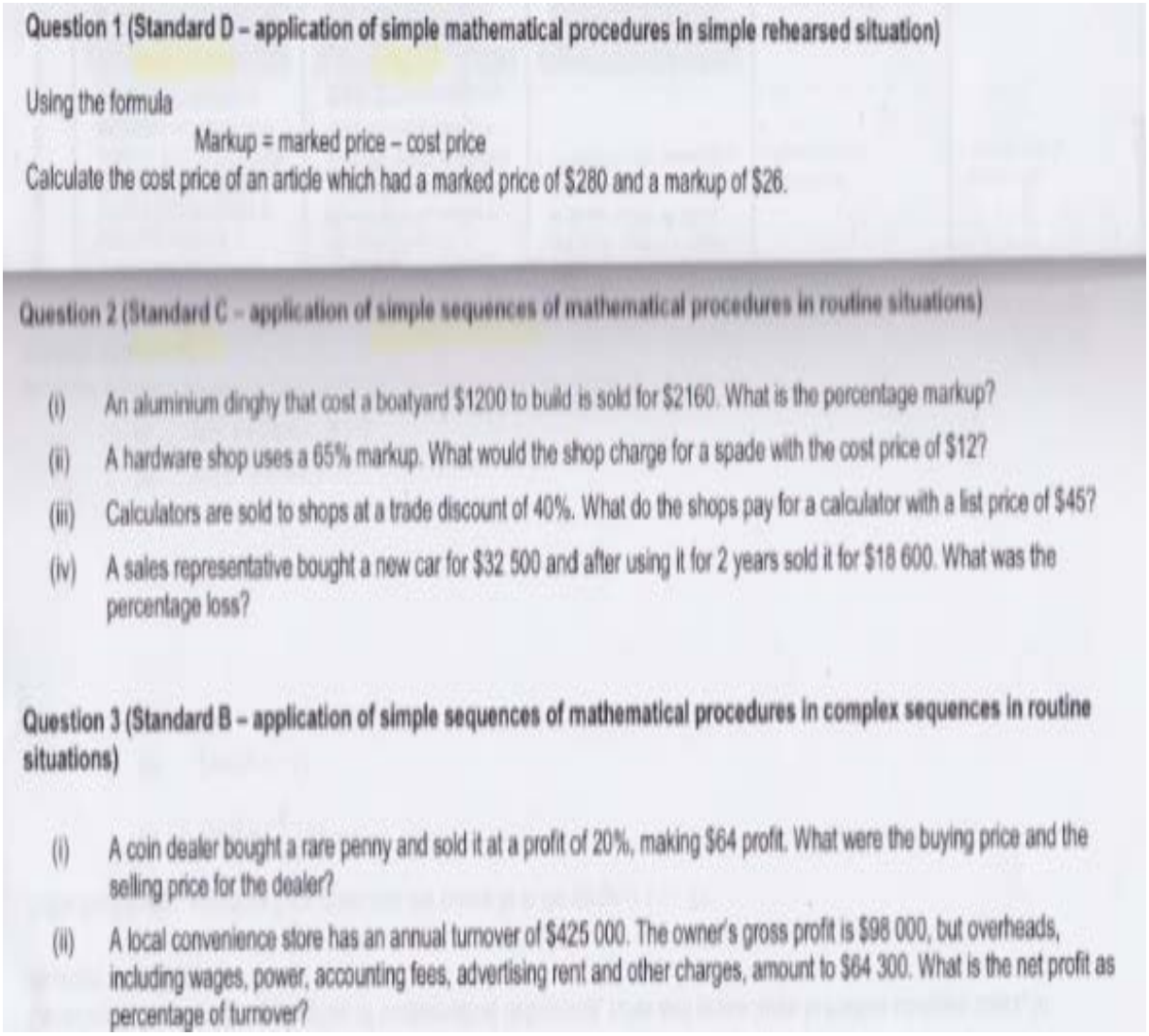
Criterion	Question	A Standard	B Standard	C Standard (eg, problems in simple rehearsed situations)	D Standard (attributed to rote-learnt or simplistic Q's)	E Standard	↓Old Mark
KNOWLEDGE & PROCEDURES	1				D		1
	2				D		1
	3			C			2
	4				D		2
	5				D		2
	6					E	2
	7			C			3
	8				D		2
	9			C			2
	10			C			3
	11 &12				D		2
	13				D		1
	14				D		1
	15					E	1
	16				D		1
	17			C			2
	18			C			2
	19					E	2
	20			C			2
	21				D		2
	22				D		2
	23			C			2
	24			C			2
	25				D		2
	26			C			2
MODELLING & PROBLEM SOLVING	27				D		4
COMMUNICATION	All test		B				
	Must be A to get A for Q.27				D		

ATTACHMENT 6: QSA MATHS WORKSHOP 2009 - Correct answers scored 'B, C or D'

Note:

1. This extract from a QSA Maths Workshop shows how Qld teachers are forced to mark down the value of correct answers by pre-ordaining them with a D, C, or B standard.

2. This was handed out to QSA maths workshops that teachers attended.



Question 1 (Standard D – application of simple mathematical procedures in simple rehearsed situation)

Using the formula

Markup = marked price – cost price

Calculate the cost price of an article which had a marked price of $280 and a markup of $26.

Question 2 (Standard C – application of simple sequences of mathematical procedures in routine situations)

(i) An aluminium dinghy that cost a boatyard $1200 to build is sold for $2160. What is the percentage markup?

(ii) A hardware shop uses a 65% markup. What would the shop charge for a spade with the cost price of $12?

(iii) Calculators are sold to shops at a trade discount of 40%. What do the shops pay for a calculator with a list price of $45?

(iv) A sales representative bought a new car for $32 500 and after using it for 2 years sold it for $18 600. What was the percentage loss?

Question 3 (Standard B – application of simple sequences of mathematical procedures in complex sequences in routine situations)

(i) A coin dealer bought a rare penny and sold it at a profit of 20%, making $64 profit. What were the buying price and the selling price for the dealer?

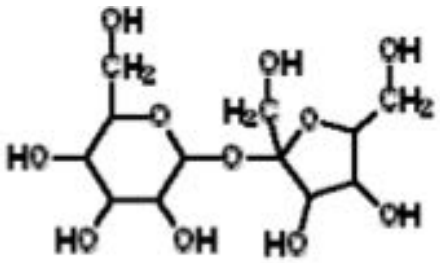
(ii) A local convenience store has an annual turnover of $425 000. The owner's gross profit is $98 000, but overheads, including wages, power, accounting fees, advertising rent and other charges, amount to $64 300. What is the net profit as percentage of turnover?

ATTACHMENT 7: CHEMISTRY MARKING GUIDE - Teachers forced to mark down

Note:

1. This QSA Chemistry marking guide gives specific guidelines to prevent normal marking and even block off As or Bs so that even when answer are fully correct they are marked down to a failure level of D or barely passing at C.

2. If the student answers 'C-standard' questions half-correctly, the teacher is thus forced to mark the child down to a D and it causes the marks to bias towards the failure-side of the scale even though they were passing the actual questions.



KCU
Describe and explain

Most covalent molecular substances exist as gases or liquids or waxy solids at room temperature. Explain why this is the case and why sucrose is different and able to exist with a crystalline structure.

KCU
Link and apply

Criteria	A	B	C	D	E
KCU Describe and explain	This question does not allow students to compare and explain complex concepts.		Explains general physical properties of covalent molecular substances in terms of their structure	Describes structure and/or general physical properties of covalent molecular substances	Recognises isolated chemical facts about covalent molecular substances
KCU Link and apply	This question does not allow students to demonstrate explanation of complex concepts and processes.	Links and applies principles relating bonding type and forces of attraction to physical properties of sucrose	Applies principles relating bonding type and forces of attraction to physical properties of sucrose	Applies principles relating forces of attraction to physical properties of sucrose	Recognises forces of attraction and/or physical properties of sucrose

ATTACHMENT 8: QSA Criteria 'Standards' - Senior Math C

Note:

1. These criteria paragraphs are mandated in the Mathematics Syllabus (2008), pp41-3.

2. These enormous tables of paragraphs (called rubrics or 'standards' matrices by QSA) must be laboriously cross-checked by teachers against every student answer in maths, chemistry and physics test papers.

Criterion		MathsB: Standard A	Standard B	Standard C	Standard D	Standard E
Knowledge and procedures	K1	The student work has the following characteristics: • recall, access, selection of mathematical definitions, rules and procedures in routine and non-routine simple tasks through to routine complex tasks, in life-related and abstract situations	The student work has the following characteristics: • recall, access, selection of mathematical definitions, rules and procedures in routine and non-routine simple tasks through to routine complex tasks, in life-related and abstract situations	The student work has the following characteristics: • recall, access, selection of mathematical definitions, rules and procedures in routine, simple life-related or abstract situations	The student work has the following characteristics: • use of stated rules and procedures in simple situations	The student work has the following characteristics: • statements of relevant mathematical facts
	K2	• application of mathematical definitions, rules and procedures in routine and non-routine simple tasks, through to routine complex tasks, in life-related and abstract situations	• application of mathematical definitions, rules and procedures in routine or non-routine simple tasks, through to routine complex tasks, in either life-related or abstract situations	• application of mathematical definitions, rules and procedures in routine, simple life-related or abstract situations		
	K3	• numerical calculations, spatial sense and algebraic facility in routine and non-routine simple tasks through to routine complex tasks, in life-related and abstract situations	• numerical calculations, spatial sense and algebraic facility in routine or non-routine simple tasks, through to routine complex tasks, in either life-related or abstract situations	• numerical calculations, spatial sense and algebraic facility in routine, simple life-related or abstract situations	• numerical sense, spatial sense and/or algebraic facility in routine or simple tasks	
	K4	• appropriate selection and accurate use of technology	• appropriate selection and accurate use of technology	• selection and use of technology	• use of technology	• use of technology
Criterion		Standard A	Standard B	Standard C	Standard D	Standard E
Modelling and problem solving	M1	The student work has the following characteristics: • use of problem-solving strategies to interpret, clarify and analyse problems to develop responses from routine simple tasks through to non-routine complex tasks in life-related and abstract situations	The student work has the following characteristics: • use of problem-solving strategies to interpret, clarify and analyse problems to develop responses to routine and non-routine simple tasks through to routine complex tasks in life-related or abstract situations	The student work has the following characteristics: • use of problem-solving strategies to interpret, clarify and develop responses to routine, simple problems in life-related or abstract situations	The student work has the following characteristics: • evidence of simple problem-solving strategies in the context of problems	The student work has the following characteristic: • evidence of simple mathematical procedures
	M2	• identification of assumptions and their associated effects, parameters and/or variables	• identification of assumptions, parameters and/or variables			
	M3	• use of data to synthesise mathematical models and generation of data from mathematical models in simple through to complex situations	• use of data to synthesise mathematical models in simple situations and generation of data from mathematical models in simple through to complex situations	• use of mathematical models to represent routine, simple situations and generate data	• use of given simple mathematical models to generate data	
	M4	• investigation and evaluation of the validity of mathematical arguments including the analysis of results in the context of problems; the strengths and limitations of models, both given and developed	• interpretation of results in the context of simple through to complex problems and mathematical models	• interpretation of results in the context of routine, simple problems	•	
Criterion		Standard A	Standard B	Standard C	Standard D	Standard E
Communication and justification	C1	The student's work has the following characteristics: • appropriate interpretation and use of mathematical terminology, symbols and conventions from simple through to complex and from routine through to non-routine, in life-related and abstract situations	The student's work has the following characteristics: • appropriate interpretation and use of mathematical terminology, symbols and conventions in simple or complex and from routine through to non-routine, in life-related or abstract situations	The student's work has the following characteristics: • appropriate interpretation and use of mathematical terminology, symbols and conventions in simple routine situations	The student's work has the following characteristics: • use of mathematical terminology, symbols or conventions in simple or routine situations	The student's work has the following characteristics: • use of mathematical terminology, symbols or conventions
	C2	• organisation and presentation of information in a variety of representations	• organisation and presentation of information in a variety of representations	• organisation and presentation of information	• presentation of information	• presentation of information
	C3	• analysis and translation of information from one representation to another in life-related and abstract situations from simple through to complex and from routine through to non-routine	• analysis and translation of information from one representation to another in life-related or abstract situations, simple or complex, and from routine through to non-routine	• translation of information from one representation to another in simple routine situations		
	C4	• use of mathematical reasoning to develop coherent, concise and logical sequences within a response from simple through to complex and in life-related and abstract situations using everyday and mathematical language	• use of mathematical reasoning to develop coherent and logical sequences within a response in simple or complex and in life-related or abstract situations using everyday and/or mathematical language	• use of mathematical reasoning to develop sequences within a response in simple routine situations using everyday or mathematical language		
	C5	• coherent, concise and logical justification of procedures, decisions and results	• coherent and logical justification of procedures, decisions and results	• justification of procedures, decisions or results		
	C6	• justification of the reasonableness of results	•	•		

ATTACHMENT 9: WESTERN AUSTRALIA - Assessment Overview

The Western Australian assessment system follows a clear method to arrive at grades, using international standard numerical marks for both internal (school-based) and external exams.

Government of Western Australia
Curriculum Council

WACE

WACE course scores – 2011

Overview

The calculation of a **WACE course score** is one of the end points of a series of processes used to report the performance of students who sit the WACE examination for a course/stage. The WACE course score provides an assessment of a student's achievement in terms of established standards for the course/stage.

Figure 1 provides the sequence of marks adjustment processes that generate the WACE course score and scaled score for a course with only a written component. For a course/stage with both written and practical examination components, the same set of processes is applied separately to both components. See 'Your Marks 2011' for more detail.

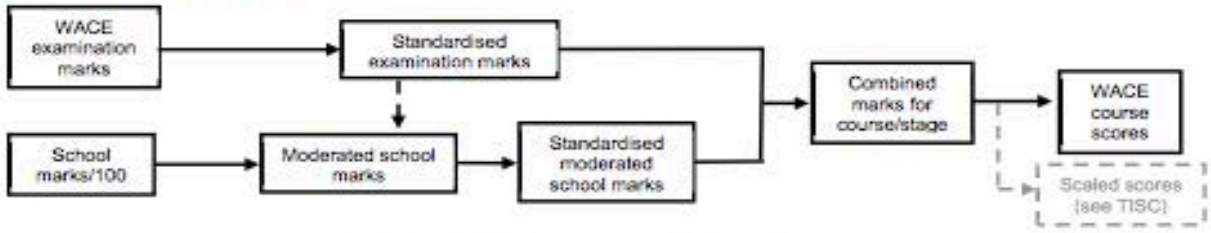


Figure 1 Marks adjustment processes

What does a WACE course score mean?

The purpose of WACE course scores at a particular stage of a course is to report student performance in relation to standards determined by a panel of experienced educators. WACE course scores for a course/stage[1] are based on its combined marks, and where these marks sit in relation to the standards. For a course/stage which has both written and practical components, a combined mark is calculated, as shown in Figure 1, for each component, and the combined mark for the course/stage is the *weighted* average of the combined marks calculated for each component. The weightings for a course/stage are given in the syllabus for the course/stage.

Standards are specific to each stage of a course, and there is no direct comparison between WACE course scores for the two stages of a course. However, the Stage 2 syllabus is less demanding than the Stage 3 syllabus, so a WACE course score of 78 for Stage 2 will represent a lower achievement than a WACE course score of 78 for Stage 3 of the same course. Standards also are specific to a course, so it is not necessarily true that a WACE course score of 78 for Stage 2 of one course is as difficult to achieve as a WACE course score of 78 in Stage 2 of any other course.

Under these standards, for all course/stages, a WACE course score

- of 75 or more indicates *excellent achievement*
- between 65 and 74.9 indicates *high achievement*
- between 50 and 64.9 indicates *satisfactory achievement*
- between 35 and 49.9 indicates *limited achievement*
- of 34.9 or less indicates *inadequate achievement*.

WACE course scores and scaled scores

As shown on Figure 1, WACE course scores and scaled scores are both derived from combined marks for the course/stage, but the two scores are quite different because they each serve a different purpose.

WACE courses scores are calculated by the Curriculum Council for the purpose of reporting student achievements in terms of standards specific to a stage of a course.

Scaled scores are calculated by the Tertiary Institutions Service Centre (TISC), in collaboration with the Curriculum Council, for the purposes of reporting achievements in a course/stage on a scale of marks which is common to the scale of marks in all course/stages. This allows marks from different course/stages to be added to determine Tertiary Entrance Aggregates (TEA) for students applying for entry to university.

A WACE course score achieved for study in a course/stage will be different from the scaled score achieved for the course/stage.

[1] WACE course scores are produced only for Stage 2 and Stage 3 studies.

Attachment – Western Australian report cards to parents, exam and school marks moderated.

Standard-setting and WACE course score calculation

Each year, a group of experienced educators studies the examination scripts of students to determine the combined mark boundary for each achievement band of a course/stage.

It should be noted that, from year to year, and from course/stage to course/stage, a particular combined mark will not always represent the same standard of achievement. For example, in a particular year the expert group may determine that combined marks

- above 76 meet the standard of Excellent achievement
- between 63 and 76 meet the standard of High achievement
- between 43 and 63 meet the standard of Satisfactory achievement
- between 33 and 43 meet the standard of Limited achievement, and
- below 33 meet the standard of Inadequate achievement.

Figure 2 demonstrates how these particular combined mark boundaries are linked to the unchanging WACE course score boundaries to generate WACE course scores. For example, candidates with combined marks between 63 and 76 will receive WACE course scores between 65 and 75.

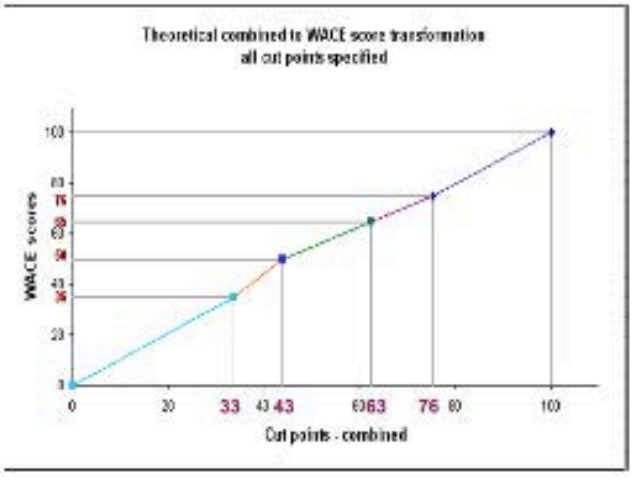


Figure 2 WACE course score calculations

WACE course reports

A feature of the Stage 2 and Stage 3 WACE course reports sent to each student in December of each year is a graph showing the student's WACE course score in relation to:

- the WACE course scores of all other students of the course/stage
- descriptions of typical examination performances in each performance band – these describe the *standard* of performance in the band.

Figure 3 provides an example of a typical WACE course report issued for 2011 studies.

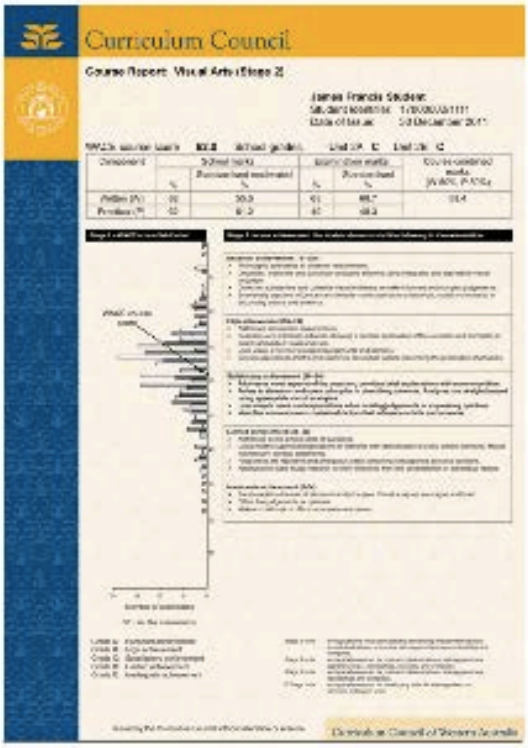


Figure 3 Typical WACE course report

Useful points to remember

- **WACE course scores** report a combination of a student's school and examination performances in terms of standards.
- **Standards** are established via expert assessment of a range of student performances in the WACE examinations.
- **Review** of established standards is conducted on an annual basis.

Further information

The Curriculum Council publishes a number of other information documents describing the marks adjustment processes. These can be found under 'Your marks' on the council website at http://www.curriculum.wa.edu.au/internet/Senior_Secondary/WACE_Examinations/Your_Marks

ATTACHMENT 10: ARTICLES - Direct instruction success stories

Note: Noel Pearson & Kevin Donnelly show superior results of direct methods including skills tests, rather than the QSA's flawed model of continuous assessment.

Direct Instruction may not be rocket science but it is effective

BY: KEVIN DONNELLY From: The Australian August 18, 2012 12:00AM
http://www.theaustralian.com.au/national-affairs/direct-instruction-may-not-be-rocket-science-but-it-is-effective/story-fn59niix-1226452817924

NOEL Pearson may not be an educationalist by training but when it comes to his advocacy of Direct Instruction and knowledge about what best works in the classroom, he outshines most academics in teacher training institutes and universities.

Since the late 1960s and early 70s, beginning teachers have been taught that more formal, structured and teacher-directed models of classroom interaction are outdated and ineffective.

In the jargon much loved by academics, teachers are called on to be facilitators and guides by the side. Whether associated with what was known as child-centred learning, or its more recent cousin, personalised learning, the assumption is that children must take control and direct their own learning.

Open classrooms, children working in groups, teachers no longer standing at the front of the room and lots of noise and activity are all manifestations of this progressive and new-age model of classroom interaction.

Memorisation and rote learning are condemned as drill and kill, whole language, where beginning readers are told to look and guess and phonics and phonemic awareness go out the window, reigns supreme and mental arithmetic and reciting poetry are obsolete.

There's only one problem: what has become the current orthodoxy in teacher education is the least-effective and most costly in terms of energy and time. Best illustrated by a US study titled Project Follow Through that evaluated various models ranging from child-centred to teacher-directed, the most successful method of teaching is Direct Instruction.

The more traditional approach involves carefully structured, highly focused lessons where teachers are in control, where children are given a clear and succinct idea of what needs to be mastered and where there is immediate feedback.

When detailing the results of Project Follow Through, the Australian Council for Educational Research's Rhonda Farkota writes: "Student-directed learning had consistently more negative outcomes than those achieved in traditional education on all measures of basic skills, cognitive development, and self-esteem."

The University of Melbourne's John Hattie, in his analysis of what most influences student learning, also places Direct Instruction highly. Hattie notes that the prevailing fashion in teacher education departments is to undervalue Direct Instruction in favour of more politically correct options such as personalised learning.

John Sweller, an academic at the University of NSW specialising in how children best learn, also supports Direct Instruction when he writes: "Information should always be presented in direct rather than indirect form. This principle applies equally to all educational contexts but flies in the face of much educational theory of the last few decades".

That Direct Instruction is so successful stands to reason. Children, especially boys, need a structured, orderly environment where there are clear guidelines about what needs to be accomplished and where there is immediate feedback.

In order to be creative and to master higher-order skills, children first need to learn the basics so that they become automatic. Repetition and rote learning are necessary, especially in areas such as reading, where those children who have been taught to look and guess quickly become frustrated.

Open classrooms, where children have the freedom to move around, direct their own learning and teachers act as guides by the side, are ineffective, noisy and create an environment where busy work is often confused with constructive and essential learning.

That Australia's teacher training academics largely ignore the research proving the benefits of Direct Instruction should not surprise. Many, such as the Queensland University of Technology's Allan Luke, have made a career out of the new pedagogies and they have a vested interest in maintaining the status quo.

It's also the case, given the cultural Left's control of teacher education, that academics favour what they consider to be a more empowering and liberating model of classroom interaction where teachers, instead of being authority figures, are reduced to being one learner among many. As noted by Jennifer Buckingham when detailing why the education establishment refuses to acknowledge the central role of a phonics and phonemic awareness model of teaching early reading, many educators prefer misguided theory to evidence-based research.

One of the defining characteristics of Julia Gillard's education revolution is its statist, one-size-fits-all approach in areas such as a national curriculum and national teacher certification and training. Increasingly, such initiatives are linked to funding and, as a result, schools will have no choice but to implement head office dictates. One hopes that Pearson and the Cape York Aboriginal Academy at Aurukun have the ability and resources to escape such a fate and to continue embracing Direct Instruction. ...

Kevin Donnelly is director of Education Standards Institute and author of Educating Your Child: It's Not Rocket Science.

Controversial teaching method brings hope and social change to Cape York

BY: NICOLAS ROTHWELL From: The Australian May 11, 2013 12:00AM

Teacher assistant Maryann Kerindun, with students at the Cape York Aboriginal Australian Academy's Aurukun campus, says pupils "blossom" under Direct Instruction. Picture: Nicolas Rothwell *Source:* The Australian

"GET ready!" A hand-clap. The children lean forward in their seats, expectant, alert.

"What colour?" their teacher calls out. "What number?" The replies come back in unison. The mood is focused; the pace swift. New words, facts, concepts are brought in one by one, and reappear all through the lesson and reinforce each other. This is concentrated learning, with a swing and urgency about it.

In a small classroom in Aurukun on the west coast of Cape York, step by step, the everyday wonder of Direct Instruction is unfolding. Here, in the far reaches of far north Queensland, in a remote Aboriginal community, something remarkable is taking place: young boys and girls are at their desks, studying, writing, absorbing every piece of knowledge offered them. It is the dream that has seemed beyond realisation in recent years: a remote-area indigenous school where the students are bound for success. Is the dream at last being fulfilled?

Aurukun is the showpiece campus of the Cape York Aboriginal Australian Academy, key project of the region's great reformer, Noel Pearson: a school run almost entirely on the basis of the Direct Instruction system; a school already much inspected and evaluated, eagerly praised and pre-emptively critiqued. But only now, two years into the venture, is there something of substance to assess: data, initial evidence to go with the impressions that days spent in the classrooms leave in the mind.

First, though, the strange backstory: the tale of how Direct Instruction, "DI", an American teaching method pioneered in Illinois and Oregon, and much used in public schools in US inner cities, came to Cape York. ... The Cape York welfare reform trial began in mid-2008 ... at its core was ... Pearson's blueprint for a network of top-flight primary schools, and an academy, with high aims and concrete proposals to realise them. From his own experience he knew that education liberates. Get the schooling right, and anything is possible.

What would be the best replacement for the long-established, lacklustre approach? He had investigated teaching models ... One stood out: DI, the brainchild of a most unusual professorial pioneer named Siegfried Engelmann.

Pearson recounts his discovery of DI and the development of the Cape York Academy concept in a slim book he published two years ago, titled Radical Hope. It contains a brief afterword in which the very first field reports from the DI classrooms are set down. They were positive, and even then Pearson was optimistic, with good reason. DI is straightforward, and based on close study of the way a child's mind works. It is a teaching method, as well as a tightly controlled curriculum. ... It works wherever it is properly implemented ...

A process of constant student assessment is at the heart of DI. Each child must learn each lesson, and achieve mastery, in reading, in writing, in the new concepts introduced in class every day. Individual tests are quietly administered to check progress every week. At the week's end, the teachers make a call to their American DI learning colleagues to go through the results. Each student's performance is checked. If a child or group of children lag in any area, they are split from their class and taught in a new group: they will not be left behind. ...

The experience has been similar at the Coen campus, which began DI instruction at the same time, early 2010. There, Billy Pratt, a local with three children at the school and one in daycare, about to begin classes, has come to believe in the new system. Pratt is a member of the academy board, and heads a new regional ranger group. He looks back to his own childhood, when he had to rely on outside mentors to make progress.

"One thing we could never figure out was how come a teacher could achieve in the mainstream schools, but not here, in the bush," he says. "Now DI has come in, I think it works because of the method, and the constant testing and measuring. They don't let the students go from grade to grade without picking up anything. ...

DI lessons, as witnessed in the classrooms of the Cape, are a striking affair. A sense of excitement is present, and also a mood of harmonious forward momentum. ... The executive principal now overseeing the entire three-campus academy, Cindy Hales, is convinced this aspect of the method is central to its effectiveness. "Just because DI's scripted doesn't mean there's no life or heart," she says. "It's a kind of persuasive acting, a drama that makes learning live in the minds of children. People think it's easy and rote just because it's written down - but the hardest part is the transition to a learning life in the classroom: it's hard, good work."

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