SMC&PA Submission 174
Received 13 May 2013

To The Parliamentary Inquiry into assessment methods for senior maths, chemistry and physics in Queensland schools

Who am I?

Paul Bannister

Educated at QUT (B.App.Sc 1969) UQ Dip.Ed 1970 B.Ed 1978.

(assisted Prof Julius Sumner Miller on set for ABC TV "Why Is It So?" 1968 Festival Hall Brisbane.)

1971-73: Classroom science/maths teacher MareebaSHS/GladstoneSHS

1974: Acting HOD science Gladstone SHS

1975-2005: HOD science Atherton SHS

2005-present: part-time teaching, contract teaching, daily relief teaching, and Laboratory technician plus temporary school gardener.

1975 ➔ involved in BSSSS/QSA district panels in physics, biology, chemistry and multistrand science as panel member or panel chair.

2003 Only secondary teacher appointed to the **Assessment and Reporting Taskforce (24 September 2001).** Some of the members of this taskforce are involved in the Expert Advisory Forum.

Reference item 2(c)

<u>The ability of assessment processes to support valid and reliable judgments of student outcomes</u>:

Point 1. **The wording of a "criteria sheet**":

With the introduction of the 2007 syllabuses there has been endless debate about "criteria sheets". Outcomes based assessment allows a student to be given a grade when they have satisfied the requirements of a particular criterion.

Some criteria can contain quantifiable descriptors....

"*The student is able to multiply numbers up to 12 by 3*."

Some criteria contain qualitative descriptors.

"*Communicates information that is generally relevant to the context that, despite errors, does not detract from the impact of the investigation and is of the correct length*."

Teachers, parents and students that read these criteria are most likely to have a more concise view of the first criterion than the second. The student would be able to make an accurate judgment about their attainment of the first criterion, whereas they may need guidance by the teacher about their success in the second.

With a criteria sheet having standards from A➔ E, and subject objectives such as

- ⇒ *Knowledge and conceptual understanding*
- ⇒ *Investigative processes*
- ⇒ *Evaluating and concluding*

with several criteria within each objective, a student could be faced with 30 or 40 different criteria to "interpret". ("Who are criteria written for?" ...see appendix 3.)

It is generally during classroom "talk" that the teacher has to explain what the jargon means.

Point 2. **The erroneous design of a criteria sheet.**
The design of many criteria sheets may lead to invalid assessment processes.
Example: Criteria sheet for Assessment topic Q. (criteria descriptors left out)

	A	B	C	D	E	Result
Knowledge and understanding	.Recalls.... .Comprehensively.. . .√ . . √ .	√ √ √ √	√			B+
Investigative Processes	N/A					N/A
Evaluating and concluding	. .			√ √		D

The problem here is that there are different numbers of criteria describing the assessment outcomes. There are seven criteria for Knowledge but only two for the "Evaluating criteria". The Knowledge is given a B+ result, while the Evaluating is given a D.
These results are then transferred to a profile sheet and treated "equal" in the overall assessment of the student. The information on the profile sheet does not indicate the number of descriptors used.
Did the student realize that each of the "evaluating criteria" was more than three times the weight compared to the "knowledge criteria"? More importantly, did the teacher or the panel, realize this as well? From teachers that I have discussed this with, the answer is usually NO. I have seen criteria sheets where the ratio of one objective to another was 7:1.

(Luke 23:34) ...forgive them for they know not what they do..

The interesting procedure of going from a verbal (qualitative) criteria sheet to a quantitative profile sheet (quantitative because teachers have to somehow "average" several assessments into a subject grading on a 15-point scale (A➔ E with + and -, such as B+ or C-) AND then use this to go to an R6 exit arrangement with 50 points on it and for large subjects proceed to a 200point scale defies event the smartest thinkers.
An measurement becomes less reliable the more you do with it is basic science.
The QSA defies the basic laws of measurement that we teach to year 11 students.

General Bits

The QSA is an organisation that issues syllabi that have little consultation and few exemplars on which to base a school's work-program, only to be told that the program failed accreditation and has to be altered...but to what?? The QSA often failed to provide sufficient direction about what was acceptable but had plenty to say about what was unacceptable. Few teachers had faith in their operation.

On a positive note, the QCS test is very good (the Qld external exam for about 30% of year 12's.)

Final comment: In 1970 I studied "Reliability and Validity of Educational Measurement". I was drawn to the writings of Sergiovanni and Carver who had a recent publication out at the time. During my career of 30 years as a science HOD I tried to implement some of the ideals that their writings exposed me to. It may-be an appropriate time for Qld education to revisit these ideals.

Yours faithfully

Paul Bannister

P/T Lab Technician (and loving it.)

There is an assumption that the 2007 physics and chemistry syllabi are actually about physics and chemistry..... pity this is not one of the terms of reference of this inquiry.

other submissions have already referred to the relevant CCE's.

Don't forget to read the QSA (BSSSS) copy of their research into "The length of a work-program? March 1992 Research monograph Series No 7 (Kernke and Allen)

or the two page version of the flow chart "District Level Work Program Approval Business Process". (90+ boxes and 100+ arrows.... brilliant stuff.)

I would like to support the submission of the former HOD Brisbane State High School 1972-2008.

Happy Christmas.

Appendix 1

Inquiry into assessment methods for senior maths, chemistry and physics in Queensland schools

Expert Advisory Forum

Wednesday May 1 2013, 9.15 am for 9.30 am, until 12.30 pm

Parliamentary Annexe, Alice Street, Brisbane

Confirmed participants

Dr Shaun Belward, Head of Discipline, Mathematics, James Cook University
Dr Alberto Bellocchi, Lecturer, Faculty of Education, Queensland University of Technology (tentative)
Emeritus Professor Peter Fensham, Adjunct Professor, Faculty of Education, Queensland University of
Technology
Professor Merrilyn Goos, School of Education, University of Queensland
Dr Carole Haeusler, Lecturer in Math, Numeracy and Science Education, Faculty of Education,
University of Southern Queensland
Professor Susan Hamilton, School of Molecular and Microbial Sciences, University of Queensland
Professor Peter Jones, Head of School - Medicine, Bond University
Ms Ailsa Leacy, Acting Institute Director, Southern Queensland Institute of TAFE
Professor Euan Lindsay, Dean, School of Engineering and Technology, Central Queensland University
Dr Gabrielle Matters, Principal Research Fellow, Australian Council for Educational Research
Professor Peter Ridd, Head of Discipline, Physics, James Cook University
Professor Halina Rubinsztein- Dunlop, Head of School of Mathematics and Physics, University of
Queensland
Professor Royce Sadler, Emeritus Professor, Griffith University
Professor Robert Sang, Head of School of Science, Griffith University
Dr Richard Walding, School of Biomolecular and Physical Sciences, Griffith University
Ms Patrea Walton, Chief Executive Officer, Queensland Studies Authority

Appendix 2

The Assessment and Reporting Taskforce was constituted in September 2001. The taskforce comprised two groups: an expert panel and a respondent panel. Expert consultants to the taskforce were Professor Robin McTaggart, Pro-Vice-Chancellor Staff Development and Student Affairs of James Cook University in Townsville, and Professor Caroline Gipps, Deputy Vice-Chancellor of Kingston University in the United Kingdom.

Key stakeholder groups, both within and external to Education Queensland, were invited to nominate persons to make up the membership of the expert panel and the respondent panel.

Expert panel

Nominee of stakeholders
Mr Paul Albert Chief Executive Officer, Curriculum Council of Western Australia
Dr Reg Allen Deputy Director (Testing and Analyses), Queensland Board of Senior Secondary School Studies
Dr Gabrielle Matters Director, New Basics Branch, Education Queensland
Dr Graham Maxwell Senior Lecturer, School of Education, University of Queensland
Professor Marilyn McMeniman Professor, School of Cognition, Language and Special Education, Griffith University
Professor Sue Willis Dean, Faculty of Education, Monash University

Respondent panel

Nominee of stakeholders Position/Organisation
Paul Bannister Teacher, Atherton State High School
Michael Brett Principal, Goodna Special School
Gerry Buwalda Principal, Geebung Special School
Michael Byrne Principal Advisor, Performance Measurement and Review Branch, Education Queensland
Tracey Chappell Principal, Aitkenvale Special School (Association of Special Education Administrators in Queensland)
Garry Cislowski President, Queensland Council of Parents and Citizens' Associations
Jo Diessel Director, Teaching and Learning Branch, Education Queensland
Lynne Foley District Director, Rockhampton, Education Queensland
Jeanette Gentle Project Officer, Statutory Authority Project, Education Queensland
Donna George District Director, Stafford, Education Queensland
Kevan Goodworth A/Assistant Director-General (Education Services), Education Queensland
Jo McCulloch Teacher, Berserker Street State School
Julie-Ann McCullough President, Queensland Teachers' Union
John O'Brien Assistant Director (Moderation), Queensland Board of Senior Secondary School Studies
Dr Bernadette O'Rourke Principal, Corinda State High School (President, Queensland Secondary Principals' Association)
Vicki Raynor Principal, Capricornia School of Distance Education (Australian Association of Distance Education Schools)
Lyn Ruttley Principal, Albany Creek State High School
Joy Schloss Project Officer, Education Inclusion Programs, Education Queensland
Andrew Seaton Education Advisor, Logan-Beaudesert District, Education Queensland
Robin St John Principal, Inglewood State School (Queensland State P–10/12 Administrators' Association)
Jim Tunstall Director, Queensland School Curriculum Council
Denise Turnbull Project Officer, Education Inclusion Programs, Education Queensland
John Wessel Principal, Fitzgerald State School (Queensland Association of State School Principals)

Special advisors

Professor Roger Slee Deputy Director-General (Curriculum), Education Queensland
Mr Peter Luxton Principal Executive Officer, Curriculum Implementation, Education Queensland
Dr Janet Reynolds Senior Education Officer (Technology), Teaching and Learning Branch, Education Queensland

Appendix 3

Who needs criteria?

Criteria sheets are written in the educational jargon of teachers# and university educationists.

Parents at home, educated in a different era, often don't read them or understand them*.

Students in the "A" levels of the subject may understand part of it but generally just do their best for their age and ability and it happens to be an "A" level effort. Lucky them.

Students in lower levels need to submit "drafts" to get information from teachers to help them to a higher level. A student-orientated criteria sheet should be able to be used by a "D" level student to "self-access" their effort and fix their work to get to a higher level.

No such criteria sheet exists.

Just read a few of the Standard D criteria on any criteria sheet in science and you will know what I mean.

I would say that the order of understanding of criteria is:

QSA panel chair, teacher, ...(big gap)..... , student, parent.

The very person that could help the student, the parent, is the least likely to understand what to do. Interestingly the parent's helping their students with assignment work is off limits. Herein lies a contentious issue. The QSA basically does not want parents involved with their kids work.

How can parents help? (from QSA website...
http://www.qsa.qld.edu.au/downloads/senior/snr_physics_07_guide.pdf

Parents can help students by:

providing a supportive environment in the home
discussing physics issues, such as those seen on TV documentaries, with their children
providing access to various sources of information
encouraging their children to work cooperatively within the family group
being understanding of the time commitment students may need to devote to the study of Physics
offering their services (if they work in a relevant industry) as guest speakers, work placement providers for students, or demonstrators of skills applicable to particular units of work.

but don't help with assignments (ERT's and EEI's) as this is assessment....

teachers sometimes copy and paste criteria that they do not fully understand.

* opinion from "incidental social chat" and parent-teacher interviews.