SMC&PA Submission 215
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Background

I have been a Physics and Senior Maths teacher for approximately 16 years with some experience in Chemistry. I have been a Panel member on the 1995 syllabus and the 2007 syllabus Physics Panels for approximately 10 years in total. Additionally I have been Science and Maths Coordinator at my schools for approximately 10 years and am currently Middle School Coordinator.

Summary of concerns

Although some aspects of the latest syllabi are welcome, such as a greater emphasis on practical science, experimental design and a contextual approach, I have serious concerns about other major aspects of the Physics, Chemistry and Maths syllabi. My main concerns include :

(1) the current assessment approach leads to great inconsistency between teachers and schools when making judgements on individual assessment tasks as well as when deciding on overall levels of achievement.
(2) the banning (or at least strong discouragement) of the use of marks in areas such as Knowledge and Procedures in Maths reduces the accuracy of judgements and quality of feedback for students and parents.
(3) the mandated criteria sheets based on unclear exit standards do not provide transparent feedback for students and parents and cause much confusion for teachers and Panellists.
(4) The Monitoring and Verification process and feedback is extremely inconsistent
(5) the unrealistic length of EEIs and the associated increase in workload for teachers and students
(6) the points mentioned above are making these subjects less attractive to students, teachers and prospective Panellists.

Elaborations

(1) **The current assessment approach leads to great inconsistency between teachers and schools when making judgements on individual assessment tasks as well as deciding on overall levels of achievement** :

The fact that the exit standards are unclear and their meaning is still being debated by teachers, panellists and the QSA is obviously going to cause inconsistency in judgements. How can you kick a goal accurately if you are not sure where the posts are?

The system of identifying each question as an A, B or C question (or even a D question??) leads to much subjectivity and inconsistency. I have read from some teachers that 'judgements are remarkably consistent across teachers and schools'. My experience, and the experience of the vast majority of teachers I work with in schools and on Panels, is quite definitely the opposite. Inconsistencies between teachers who work closely together and between schools on Panel days are quite large. It is common to see judgements from different teachers to vary by significant margins. As a simple example, take the below grades on a criteria sheet.

	A	B	C	D	E
Q1			X		
Q2				X	
Q3		X			
Q4			X		
Q5	X				
Q6				X	

What would you give this students as an overall grade? I know teachers who say an A- because they have demonstrated one of the two A questions. I also know teachers who would say a C+ because they have been dragged down by the Ds they have received (how can you be more than a C when you get a D for the C questions?). The difference between these grades is substantial. This situation on a student's criteria sheet is not extreme or uncommon and it leads to great inconsistencies on individual assessment tasks.

The way that the final LOA is decided is also very subjective. Take the below example of a typical school profile.

	Knowledge and Conceptual Understanding	Investigative Processes	Evaluating and Concluding
Assessment Item 1	A	B	D
Assessment Item2	C	A	B
Assessment Item 3	A	D	B
Assessment Item 4	B	A	C
Assessment Item 5	D	C	A

What would you give this student on a 50-point scale (ie from VLA1 to VHA10)? If this is not difficult enough, what this profile doesn't say is what weighting each assessment item has in each criteria. For example, Assessment Item 2 may have had only one IP question while Assessment Item 4 may have been significantly weighted towards IP. The response to this has been 'you need to consider the whole package - not just the profile'. This clearly will lead to large differences in judgements and this has proven to be the case. Add the fact that 'fullest and latest' can also be applied, there are vast differences in judgements between teachers.

Some schools have moved to profiles where they record every A opportunity, B opportunity etc that a student has had and how many times students have demonstrated these in order to make judgements (my own school does this). This makes judgements a little clearer but still nowhere near as accurate as marks. However these profiles make little sense to the students and parents - surely a major consideration - and the time increase in maintaining these records greatly impacts on other preparation, correction and family time.

Ultimately, we are to rank students from VHA1 to VLA10 - a 50-point scale. It is easy to appreciate how inaccurate our final judgements are with the above examples.

(2) The banning (or at least strong discouragement) of the use of marks in areas such as Knowledge and Procedures in Maths reduces the accuracy of judgements and quality of feedback for students and parents.

I have seen some extremely questionable education fads in my time, but by far the most bemusing to me has been the banning of marks in Maths and Science. It is disappointing to hear the QSA say that marks were not banned, as the message through my Panel and school was very clear that they are not to be used. After some angry teacher reaction, the QSA have allowed marks to be used as long as schools show they reflect the standards, a situation that makes the use of marks extremely difficult and time-consuming to implement.

The justification for banning marks that I was told by a QSA representative was that 'they were finding that marks did not reflect the standards'. I definitely disagree with the statement, as do the vast majority of teachers I know, and believe that the opposite is the case. Marks are easy to understand for teachers, parents and students, they increase accuracy in decision-making and they definitely accurately reflect the ability of the students in a well-written exam. In direct opposition is the standards-based system that is extremely subjective, unclear and inconsistent as I have mentioned earlier.

There are certain cases where criteria sheets are useful eg extended writing tasks, and there are definitely cases that marks are useful eg routine knowledge problems. Previous syllabi have left the methods flexible where schools could choose which method suits best for the particular assessment item. Marks allow the accurate weighting of assessment tasks and components of assessment tasks, rather than the current method of labelling questions A-type, B-type etc leading to significant inconsistency as explained above. This 'mixed' method makes sense and would definitely improve accuracy, quality of feedback and offer some relief in workload for teachers.

(3) The mandated criteria sheets based on unclear exit standards do not provide clear feedback for students and parents and cause much confusion for teachers and Panellists

The confusion caused by the exit standards makes it extremely difficult to write assessment items and to judge the work of other schools as a Panellist. The debates that are still going on between panellists and between teachers over things such as 'the meaning of systematic analysis', 'what is meant by data?' and 'what is the difference between KCU3 and EC1?' contribute greatly to the confusion of teachers and Panellists and the lack of confidence in their work. Despite much communication between teachers, panellists and the QSA, a number of these questions remained unanswered in 2013. As a Panelist, I find it difficult to disagree with a school's interpretation of the standards when no one I know has a clear, full understanding themselves.

The clear instruction from the QSA is that criteria sheets written for assessment items must be generic using the language from the exit standards with small statements such as 'when applied to linear motion' added to the standards to make the sheets 'task-specific'. This is the same language whose meaning teachers are confused about - how can this be meaningful for students and parents? To make feedback to students meaningful, teachers must write a inordinately large amount of writing on a criteria sheet increasing teacher workload significantly. A significant proportion of teachers simply do not bother with this extra feedback and use little more than ticks on the criteria sheet making feedback to students, parents and Panellists very little and hence why a student received the marks they did is very unclear.

(**4) Monitoring and Verification feedback is extremely inconsistent**

I have been a Panelist on the 1995 syllabus panel as well as the 2007 syllabus Panel for significant periods of time. Pre-2007 syllabus, if I was asked about the internal moderation system we have in Queensland, I would have defended it as a good, consistent process with some minor flaws.

However, since the implementation of the 2007 syllabus, the process is simply disheartening and frustrating year after year. For the reasons mentioned above, I find it extremely difficult to give quality feedback to schools. To have two hours to understand the assessment package from a school and be able to verify the standards of 9 folios is virtually impossible. The length of the EEIs makes this process harder still. Rarely do I only spend 2 hours reviewing a submission to a standard that I am comfortable with. As a result of the vagueness of the exit standards and the unrealistic time restraints, Panel feedback comes down to the opinion of the Panellist who is the most vocal or is more passionate about getting their point across. In addition, if your school submission is lucky enough to be reviewed at ~2.00pm, when Panellists are thinking about how they are getting home, you are much more likely to get your submission through (one of the minority of schools who get their submission 'approved' since the 2007 syllabus in my experience).

This is not due to a lack of professionalism or competency of Panellists. The main problem with this process is the subjectivity in the assessment judgements and the exit standards making useful and accurate feedback very difficult to give and the length of some assessment items. To give Panellists more than two hours to review submissions is not preferable for already busy teachers; the syllabus should be reviewed to make it more clear and economical and workloads should be made realistic for students, teachers and Panellists.

As frustrating as Panel days are, I would never resign from the Panel as it is necessary to keep in touch with the latest information, particularly with the 'grey areas' and often changing subtleties of the syllabus, and Panel is the best PD for this. However, despite the fact that my Panel has high quality, experienced teachers who I have great respect for and enjoy working with, each year I leave disheartened and disappointed at what takes place. After the implementation of the inconsistent 2007 syllabus, I am almost convinced an external exam with 50% of total marks and the scaling back of internal moderation is a good idea.

(**5) The length of EEIs and the associated workload for teachers and students**

This is an acknowledged problem with the 2007 syllabus. The length of the EEIs place significant stress on the students to the point where I would strongly advise no student to do a straight Maths/Science course - advice that is very disappointing to have to give.

In addition, it is important to acknowledge the workload placed on teachers in marking drafts and finals EEIs. The length of the EEIs has directly doubled my workload as a Senior Science teacher, with no increase in renumeration. I have sometimes been given 3 Senior Science classes therefore marking EEI drafts and final reports relentless throughout the year. To have to ask for less Senior Science subjects would be very disappointing as these subjects are what I am passionate about. It has placed significant pressure on my, and many others I have talked to, professional and personal life - this is not to be underestimated or glossed over.

It is disappointing to hear the QSA say they have responded to this by reducing the word limit - something those from outside the system may think is perfectly reasonable. Anyone within the system knows that the reduced word limit refers only to Discussion/Conclusion/ Recommendations and this is a realistic word limit for these sections. However the EEI itself is much larger than these sections. To demonstrate all the exit standards within an EEI, which should be done, takes a report much larger than this and must include things such as experimental design, risk assessment, hypotheses, recording and presenting of data, logbooks etc. These things must be demonstrated by the student to meet the exit standards but are not appropriate for the Discussion/Conclusion/Recommendations section of a report. As a teacher, if I was given a report of 1500 words,it would be extremely unlikely to have addresses all the exit standards at a high level.

Due to its length and the amount of writing involved, the EEI is more of a measure of how well your organise your time rather than a reflection on your ability in Physics. This situation is particularly difficult for boys. I have seen many very talented Physics students not reach their potential in the subject as EEIs do not necessarily reward students for having a high level of understanding of the Physics concepts involved. Meanwhile other less talented students, who may have a good tutor, reap the good grades. I can unequivocally confirm that, in my experience, the large EEI reports are something that are begrudged by students and take away much of the enjoyment from the practical aspect.

I am not against the concept of an EEI - in fact it is a good concept - and I can see how students could enjoy them. However it needs to be made a realistic size. An EEI should be done over a period of 2-3 weeks rather than the 6-7 weeks it does currently at our school (the syllabus says from 4 weeks up to a term should be the time put aside for an EEI).

Additionally, I can see the point of view that says that the same outcomes can be achieved via smaller scientific reports, similar to the ones I did in my Physics degree at university. This may be a way of preparing students for university more effectively.

This is a major issue and must be addressed quickly.

(6) The points mentioned above are making these subjects less attractive to students, teachers and prospective Panellists

After watching the implementation of the 2007 syllabus over a number of years, there have been some unfortunate consequences that I have witnessed. These include :
- seeing students who normally would have revelled in Physics become disillusioned with the subject, particularly with the length of Writing. I believe that these students will still

select Physics and Chemistry in the future as they are still the subjects that suit their skill-set the best therefore you may not necessarily see enrolments reduce. However the increased enjoyment from the practical aspects and contextualisation has been more than offset due to the lack of clarity in the exit standards and the length of the EEIs. I have noticed students enjoying the subject less and being less engaged than they used to as a result.
- a very sad consequence has been the fact that I have seen teachers who I have tremendous respect for become disenchanted with the 2007 syllabus, resign from the Panel and ask not to teach these subjects. To me, this is a waste of some very talented teachers and their disillusionment is understandable. The same ideas have crossed my own mind from time-to-time.

Conclusion

In summary, my main points in this submission are that the standards-based system that currently exists is one that significantly increases inconsistency in school judgements; encourages lack of quality feedback for students, parents and Panels; makes quality feedback from Panels problematic and significantly increases workloads on students and teachers.

In my opinion, much of the inconsistency that is present could be avoided by allowing the use of marks where appropriate which would make judgements, feedback and profiling much clearer. EEIs should be reduced to a realistic size. These changes would impact positively on the workload and enjoyment of the subjects for both students and teachers and improve the quality of feedback for students, parents and Panels.