From: **Jill Skinner** <jill.skinner@hvhs.school.nz>
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Subject: MCAT Concerns
To: complaints@nzqa.govt.nz

To whom it may concern,

I have previously contributed to two joint complaints to NZQA (with my department at Hutt Valley High School and as a member of the Wellington Maths Association). However, I remain concerned at the responses from NZQA, and am therefore writing again.

In the responses I have seen NZQA does not seem to be addressing (or admitting) the key issue, which is that this year's exam was particularly difficult and has disadvantaged this cohort.

These difficulties were a combination of the changes to the assessment with regards to problem solving AND the particular questions selected in this assessment.

In the letter to the WMA, NZQA apologised for not adequately "communication of changes in the style and format of questions in the 2016 MCAT". However, in my opinion the lack of communication was not the issue here. Instead the issue is the changes that were decided upon, without sufficient consultation with the sector.

The vast majority of teachers I have discussed this with are not happy with the problem solving emphasis, as it is a very different skill set than the use of algebraic methods. This means that students who are weak at algebra, but get lucky at interpreting the problems may pass, while students who are strong at algebra, but lacking in literacy will be less successful.

I will be addressing a separate email to the ministry to question the wording of the standard in this regard. However, my personal belief is that any mathematical question is a problem, and does not require a context in order to be one. The emphasis on context based questions encourages contrived situations and difficulty with interpretation.

Meanwhile, the alternative interpretation - that a problem requires selecting a method - is equally problematic. This means that questions require multiple steps and are therefore harder than expected for an Achieved student to access (who does not yet have relational thinking). It also means the emphasis moves away from using correct mathematical terms such as factorise, which are useful for the students to know.

Looking at the past few papers, the definition of problem seems to vary widely. For example, Question 1f in the 2014 paper was deemed a problem although it says solve and requires solving, whereas Question 1c is similar but not deemed to be problem solving.

However, even factoring in the change to a problem solving style, the questions this year were harder than expected. Three of the questions (1d, 2c and 2e) involved material that appeared to be above the expected level for these students, and is not covered in any relevant textbooks or sample papers.

Apart from these three tricky questions, which will certainly throw Excellence students, the vast majority of the paper were questions students found inaccessible. To have 11 excellence level questions in a paper with 18 questions is ludicrous, and bound to make weaker students nervous. Especially when a large portion of the remaining Achieved and Merit questions were also word problems which they struggled with.

The questions related to the rectangle put too large an emphasis (4 questions out of 18) on a single concept. They also put off a lot of students by being placed right at the beginning of the paper. In the papers I have marked, far more students incorrectly equated the quadratic to zero and solved, than actually only factorised.

This indicates that the vast majority of students were able to perform the skill of factorising, but unable to understand the question being asked.

The balance of the questions was also off. There were two linear questions (one of which was disguised as a quadratic), which is far fewer than previous years. The exponential questions were significantly more difficult than the 'simple' ones described in the standard, and there was too much emphasis on quadratics.

The marking schedule is not sufficient to address my concerns for these reasons:
- Students who were put off by being unable to answer the questions may not have attempted many that they were capable of, and a zero cannot be scaled up. Example comments from students (written on the exam paper): "Algebra is pointless, I'll kill myself" and "I was never taught this".
- Students felt like their study was worthless, which is likely to impact on the amount of study they do for future maths exams and other subjects. Example comments from students: "I printed off all of the past papers for nothing" and "There were only 3 questions like any of the ones I studied".
- Students have lost their confidence in what to expect from an exam paper. Example comment from a student: "Will this be in the exam, miss? Because the MCAT was nothing like what I was told".

In addition, the nature of the marking schedule means that a student needs to only get 3 correct Excellence questions out of 11 to gain an Excellence, which makes it seem like there was little reason to have so many difficult questions

To get Achieved, they need to answer a mere 3 out of 18 questions correct (a reduction seemingly caused by the change to a problem solving focus last year). For example, a student could Achieve from:
- Factorising 3 quadratics correctly - 1ai, 2d and 3ai
- Expanding 2 quadratics plus a simple substitution - 1c, 3b and 2a
- Using no variables or unknowns whatsoever - 1fi, 3c (with lines) and 3di

In none of these cases would I deem the student to have shown sufficient algebraic skills or understanding to move onto further study involving algebra. Which is something schools (until recently) liked to use this paper to assist with.

I feel very sorry for this cohort of students, as their motivation and confidence have been damaged irreparably by this paper, whether they end up getting Achieved grades due to an easy marking schedule or not.

Ngā mihi,

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