

Your Questions Answered

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The Insightful Classroom

Regular Insights, Tips and Pointers for Australian Maths Teachers

The **Assessment Issue** (part two): Your questions answered

Last issue, we asked for your main concerns about assessment. While we received plenty of different responses from teachers all over Australia, some clear patterns emerged. Now we would like to talk about some practical answers to your questions.

Firstly, our thanks to everyone who has contributed questions and suggestions about assessment over the past few weeks via email, our [Facebook](http://goo.gl/ViJPiU) (<http://goo.gl/ViJPiU>) group and in person. It is clear from your responses that assessment and grading can be tricky issues to sort out... particularly when it comes to fitting everything in to a tight schedule and then pulling lots of information from different pieces together to decide on one final grade for each student.

Over the next few pages we will be answering the most common and pressing questions that were asked, as well as providing practical advice for planning your year so that everything gets done with the minimum amount of stress. Here are the most common questions:

1. If we have different grades for different assessment pieces, how do we put it all together and give just **one grade for maths**?
2. How do I know if my student is an A or a B overall? It's really a **line-call**.
3. Currently, a C grade for us means you are at the target for that year level, B means you are one year higher and A means you are **two years higher**. Is grading in the Australian Curriculum the same?
4. I heard that you can't use **tests** anymore in maths. What is that about?
5. Are there some **standardised** diagnostic/summative assessment items that we can use instead of having to create all our own resources?
6. How do I get everything done?

Let's take a few moments to answer your questions...

How do we give just one grade for maths?

“We have marks from a test, an investigation and also the thinking journal (Back-to-Front Maths) and I am meant to put them altogether to give one mark for maths on reports. How do I average the marks? Do I give them all a percentage and add them up?”

When we are using criteria to assess it is really not about averaging at all. In fact, it is not even really about “marks” as such. Instead, it is about meeting particular standards. What we need to look for is evidence for each criteria, rather than marks from different pieces. Instead of trying to average your students’ marks, try looking at which criteria each assessment item met.

For example, your test might meet the Fluency and Reasoning proficiencies, the investigation would probably meet the Reasoning and Understanding proficiencies quite well and possibly also meet some Fluency requirements whereas your thinking journal is more likely to be about Problem-Solving, Reasoning and Understanding.

Across all of these items, put the Fluency marks together to come up with one Fluency grade, the Understanding marks together to come up with one Understanding grade etc. Then take a good look at the whole of the student work and which criteria have been met. Which grade does your evidence best support? That is the final grade to give your student on their report card. For a few scenarios, check out the “Word to HOCs” on line-calls on the last page of this edition. A good criteria sheet to use to help you put it all together can be found here (<http://goo.gl/XoA9Eh>).

What does an A mean? Isn't it about working at two years higher than the grade level?

“I am from WA. When grading, currently a C grade means you are at the target for that year level, B means you are one year higher and A means you are two years higher. Isn't grading in the Australian Curriculum the same?”

The system of marking that you have described is based on using only a student's Fluency (content) level, whereas the Australian Curriculum requires assessment using the proficiency strands of Problem-solving, Reasoning and Understanding. The achievement standards are based on the all of the proficiency strands, not just Fluency.

Getting an A is not about working multiple grade levels higher than the standard, it is about doing all of the proficiencies really well. Some things that we should look for include:

- Student solves unfamiliar problems by making connections between what they have previously seen and a new situation.
- Student adapts or manipulates equations or algorithms to find unknowns.
- Student proves that their answer and method is reasonable by using logical thinking.

Each of these statements actually have nothing to do with the content, or the grade level. They are about how a student thinks, reasons and operates mathematically. If you would like to see an example of a criteria sheet, click here (<http://goo.gl/E1jTcV>). For a broader discussion of how to assess across all of the Proficiencies, please download our previous newsletter here (<http://goo.gl/NUD3NQ>).

Can we still use tests?

“My HOC is saying that we can't use tests now to assess kids. Why not? I think they are a really important way of checking that the kids know what I've taught them.”

Tests are not “banned”. We just need to use them appropriately as one part of an overall assessment strategy.

Often in primary and lower secondary schools tests end up just assessing student Fluency because they only use routine questions. If that is all that we are using then there is a big problem – we are missing all of the other proficiency strands. How are we going to see student Reasoning, Understanding and Problem-Solving if we only ask routine questions?



When we construct assessment items, we need to think carefully about which proficiency strands they are meeting. We need to make sure that we are assessing across the full breadth and depth of the curriculum, rather than using shallow measures. Provided that there is appropriate assessment across this range, there is no reason that tests could not form part of this evidence even if they are just straight content and procedure-based questions. If they were used as the sole piece of evidence for grading then it is likely that this would be inappropriate.

How about some standardised assessment items?

"Do you have some standardised assessment items that you recommend? We use PAT Maths, but it can take a lot of time and tends to just tell us what we already knew."

This is a fairly complex question, so I'd like to tell you about three different assessments: PATM and NAPLAN and some great moderating tasks from *Back-to-Front Maths*.

PATM can be useful, particularly as a measure of student Fluency growth over time. The schools that I have seen use it effectively tend to examine student growth over two years. They test the same kids every two years and then compare the results over that period by matching results for each individual child. This allows them to check that each child is going forwards rather than just simply staying at the same point. On the other hand, it is a pretty costly test to implement properly and if your staff are assessing frequently then it is unlikely to give you a lot of new information.

NAPLAN is probably more useful, particularly as it predominately assesses Understanding and Problem Solving (rather than Fluency) and because it is compulsory. When analysing NAPLAN data, make sure that you look for trends and outliers. These can help you to see where your students are performing particularly well or particularly poorly. One simple example is to look at how your students are doing on the first ten questions and the last ten questions compared to the national average. The comparison between these two measures should be roughly equivalent. If it is not, then it tells you something important. If you are scoring comparatively higher for the first ten questions then your school probably has a higher than average component of traditional teaching and relatively less problem-based teaching. You would need to begin implementing a problem-based approach to help introduce kids to solving problems for themselves and also to deal with their misconceptions. If you are scoring higher on the last ten than the first ten, then you probably need to focus more on routine questions.

Back-to-Front Maths has some great moderating tasks that are designed to make the standards clearer and are very simple to implement, taking only about an hour of class time twice per year. These tasks have been created to reflect the intent of the Australian Curriculum proficiency strands and the achievement standards. They are not bound to the curriculum from any particular state, but instead give a point-in-time assessment for Problem-Solving, Reasoning and Understanding under the Australian Curriculum. While these tasks would not be suitable to use as your only form of assessment, they certainly give a very useful "outsiders' perspective" on how your students measure up and can quickly help to guide you in which direction to take your class next. Additionally, this approach has the advantage of providing feedback immediately rather than waiting for NAPLAN results to be published. You can check out a sample moderating task for grade six here (<http://goo.gl/BomtU7>). Web subscribers can access tasks for each grade.

Training DVDs are now available Teaching Back to Front

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How do we get everything done?

Good assessment takes time. It is important to make sure that your grading decisions are not made on the basis of only one or two measures, but on the clear progress of a student over time. Sometimes this requirement can make it tricky to fit everything in. Here is a simple schedule that I recommend schools adapt to suit their needs.

Item 1: Problem-based journal (most weeks)

When introducing a new concept to your class, have the kids use their journals or scrap books to try completing a problem first. This will enable you to diagnose any problems in their understanding at the start, as well as encouraging them to think through the concepts and realise what they don't yet know. Each lesson, aim to observe five students, making notes on their journals about the Problem-Solving, Reasoning and Understanding that each student displays. For a great example of how to use this, check out the Free Trial of Back to Front Maths problem-based journal lessons at <http://www.backtofrontmaths.com.au/teachers/freetrial>

During each semester you should therefore have observed each student on multiple occasions. Towards the end of the semester, examine each student's work and decide if you have enough evidence to grade the student or if you need more observations. This will allow you time to focus on particular students over the last few weeks of term if needed. Use the criteria sheet that comes with the free trial activities as a way of grading these.

Item 2: Moderating task (once per semester)

Towards the end of the semester, consider using a moderating task to make sure that you are consistently applying the proficiency strands across your school. You can see a sample moderating task for grade six via (<http://goo.gl/BomtU7>).

Item 3: Fluency assessment (a few times each term)

As you complete each unit of work, make sure that your students have retained what you have taught them by examining their Fluency. This might be a test with mostly routine questions, where students are able to choose from their bank of known strategies to answer the questions. It might also be a check list that you tick off as you observe the student in class or other informal measures. If you are from a State School in QLD then the C2C assessments mostly fit into this category but are generally unhelpful in the other Proficiencies.

Item 4: Possible investigation (once or twice per semester, as useful)

Investigations are a great inclusion in any assessment schedule once you have the first three items happening regularly. These add real-life purpose to the maths that students are learning as well giving you an opportunity to differentiate very easily for different learners. Start small initially as time-management can be tricky until you have run a couple of investigations to get the hang of keeping the students on track

Within each semester then, an appropriate plan might look something like this:

Weekly: formally observe at least 5 students completing their journal problem and make notes in their journals. Keep track to make sure that you are observing different students and to ensure that everyone is observed on multiple occasions throughout the semester. You will probably find that you end up observing more students as time goes on and you know what to look for more clearly.

Monthly: assess Fluency from what you have been teaching as well as the students' application of mathematics to simple problems (checklist, test, formal observation)

Each Semester: moderate across classes to ensure consistency – use a moderating task or investigation to make sure that you are judging all proficiency strands, not just content

Once you have collected all of your evidence, put all of these judgements together to come up with a final grade for each student using the achievement standards and the proficiency strands. Make sure that your judgement meets your criteria, rather than being an average of all of the grades – make a balanced judgement on the basis of a body of work that addresses multiple criteria. Check out the "Word to HOCs" for some great examples of making line-call decisions.

Exciting NAPLAN news!

Thanks so much to the many schools we have heard from about their incredible NAPLAN growth this year. It is always fantastic to hear your stories!

Our special congratulations go out to the teaching team at:

Nuriootpa Primary School

After implementing Back to Front Maths for 12 months large numbers of students have moved from the lower to middle bands as well as from the middle to upper bands. Great efforts all round!

A word to HOCs

Helping Your Staff Make Line-Calls on Student Work



Tierney Kennedy -
Education Consultant,
Author and Editor

In almost every training session on assessment, the same question keeps popping up:

“How do I decide if the grade is an A or a B? It is so close.”

So let me try to give you a few principles to work with, then a couple of scenarios by you...

1. We don't give a grade for each assessment piece and then "average them". We look at the **criteria** (<http://goo.gl/E1jTcV>) and see which description *overall* best matches the student's work in the entire assessment period.
2. The *latest* work should be the most indicative of the overall grade.
3. Make sure that you have grades for all four proficiency strands, and use these to work out your overall grade. Fluency is not weighted more highly than the others. **They are all equally important.**
4. An overall grade that is more than one grade higher than the student's lowest grade from the proficiency strands is inappropriate in most circumstances.

Scenario One:

A student received the following grades on assessment pieces:

- 3 Fluency tests all were As
- Problem Solving: B
- Reasoning: A
- Understanding: B

My answer:

This is a tricky scenario, and it could go either way. I would give the student a B rather than an A, because Problem Solving and Understanding are higher order thinking skills than Fluency. However, if the As and Bs were all particularly high, then I would give an A instead.

Scenario Two:

A student performs very highly on content-based tests and does well at both Problem Solving and Understanding, but has not shown much Reasoning (grades: Fluency – A, PS – A, U – A, Reasoning – D).

My answer:

This student really deserves another chance to improve his/her Reasoning. For tips on how, click here (<http://goo.gl/82WYee>). In the end, I would have to give this student a C grade if they could not improve their Reasoning.



In The Next Issue >>>

“My three best...”

Key teachers, numeracy coaches and curriculum leaders from around the country share three of their favourite things in primary maths – join us for tips about the best lessons, questions to ask, books and apps....

Scenario Three:

A student has very poor content (D) but very high Problem Solving, Reasoning and Understanding.

My Answer:

This student is probably gifted at maths. In this case I would give a C, but I wouldn't expect it to stay that way for long. Click here (<http://goo.gl/h6BmSt>) for more about gifted students who underperform.

Tierney

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Alternatively, visit www.backtofrontmaths.com.au/teachers

Feedback and questions are always welcome: Contact Education Consultant Tierney Kennedy at tierney@kennedypress.com.au



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