

About Top 5s

A critique by Ann Baker
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A central aspect of the Natural Maths philosophy is that all learning should be targeted to student needs so that we can be intentional in our planning and delivery.

This intentionality is strongly supported by the creation of what we call Top 5s. We first launched Top 5s in 1997 and they have proven robust and rigorous. We have of course refined them in the light of research and been able to match them to important current thinking such as the 'knowing thy impact' of John Hattie.

Recently we have realized that in some settings, the original intent of the Top 5 is being modified and inappropriately implemented or misunderstood so we've created an e-book that clarifies the key ideas for anyone who wants to review their use of Top 5s for maths or begin using them for the first time.

What are Top 5s?

Top 5s are

- targeted, intentional and developmental learning goals matched to students' current needs,
- the most urgent and pressing next steps relating to the current or next topic,
- manageable (achievable in a two-week time frame) items linked to the curriculum that you are teaching,
- written in child friendly terms as "I can" statements.

Why do we need Top 5s

Experience tells us that many teachers can tend to lurch from one *you beaut* activity to another (often randomly sourced from Pinterest or Teachers Pay Teachers) with a focus on finding fun engaging activities, without stopping to critically reflect on whether the activity fits their overarching learning intent or is developmentally appropriate. They could do this by asking themselves, 'what will the students truly be learning as they engage in the selected activity?'

Evidence for this lack of a planned sequence of activities is often found in student workbooks where each page may reveal a new activity unrelated to the one before or after. Recently I came across a student book that showed work on a 100 square followed the next day by tracing numerals and colouring matching collections to 10 and the very next day by colouring 2-D shapes. With this lack of focus, little wonder students do not develop a deep understanding of maths or a sound number sense.






The power of Top 5s to keep us focused is why they are so important. If we are 'kid watching' and reflecting on exactly what our students need to know and be able to do next, then we can pinpoint and document what needs to be on their learning trajectory. This makes the selection and planning of appropriate problems and activities to ensure deep understanding and success for all, much easier.

Done well, by investing time in them, Top 5s will provide:

- Ideas for pre- and post-assessment tasks (not tests) that allow us to 'know thy impact'
- A cohesive, well planned and documented learning journey
- Intentional and focused lessons and reflection points
- Success criteria for student self-monitoring, tracking and student goal setting, thus placing the learner at the centre of the process
- Structure and rigour for a two-week unit of work
- Prompts for questioning, observing and recording formative assessment information

An Example: A Top 5 for Fractions

Fractions TOP 5

-  I can show fractions in different ways (halves, quarters, eights, third, fifths, other).
-  I can count in fractions (halves, quarters, eights, thirds, fifths, other, mixed fractions, equivalence).
-  I can order and place fractions on an Empty Number Line (halves, quarters and eighths or thirds and fifths).
-  I can explain and prove why one fraction is smaller/larger than another or the same as another (unit fractions, non unit fractions).
-  I can solve every day problems involving fractions (area, quantity, measurement).

This Top 5 reflects the Year 2, 3 and 4 content descriptors from the Australian Curriculum: Mathematics. We know that students' understanding of fractions is often poor because of the rush we are always feeling to cover the content. Some students will still be struggling to fully understand the part, part, whole aspect or the multiplicative aspect of fractions. They will have had limited experiences, for example shading a half or a quarter in the same way

and usually only using circles, squares or rectangles. Many misconceptions and error patterns are lurking. With this in mind this Top 5 picks up at what on the surface might look like Year 2 content but invites students to work flexibly not just procedurally and to apply reasoning and justification. Ordering and sequencing numbers on an Empty Number Line (ENL) begins to push into Year 4 content although even at Year 2 students should be able to show halfway points on an ENL.

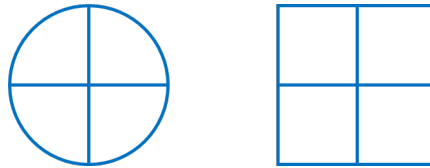
The Fractions Top 5 is straight from my imagination with a pretend class in mind. Why do I say this? Because ideally with a real class, I would have first carried out a problematized situation or activity to reveal:

- what the students do already know and can do (the strengths),
- what misconceptions or common error patterns are present,
- if there were gaps in concepts or vocabulary that need to be addressed,
- what the range of understanding is in the class and how and where they match to the curriculum, which shows what differentiation needs to be built in?
- what disposition to the topic already exists, positive or negative. in this case, “i hate fractions.”

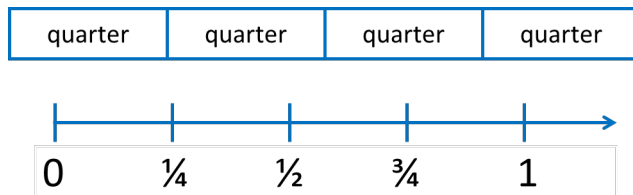
NOTE:

There are three main forms of fractions to consider here. They are:

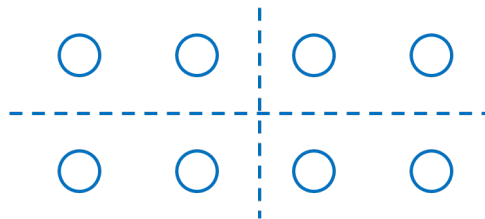
The **area** model



The **measurement or linear** model




The **quantity** model



It is intended that all three will be included in the planning based on this Top 5.


Catering for Differentiation

At the end of each Top 5 item we can include brackets to show how we intend to differentiate, as in:

 I can show fractions in different ways (halves, quarters, eights, third, fifths, other).


For some students, halves and quarters will be the focus, for others that may include, eights, third and or fifths while of course there are no limits for those students who already display deep understandings and solve unfamiliar, complex problems involving fractions. Similarly, flexibility with showing fractions and the number of different representations should be made challenging for some students.

Some students will count in halves only, some will mix the patterns and bring in equivalence and mixed fractions.

 I can count in fractions (halves, quarters, eights, thirds, fifths, other, mixed fractions, equivalence).

All can be included and catered for and progress monitored.

Everyday problems ensure that we help students make connections between fractions and where they occur in the real world:

 I can solve every day problems involving fractions (area, quantity, measurement).

This could include time, money, mass and capacity and so on.

What goes wrong when teachers first begin to create Top 5s?

Top 5s are not easy to create at first. It does get easier overtime when we have engaged in kid watching and whether our Top 5s were pitched at the right level of development. Initial attempts are usually:



- Over ambitious. They cannot possibly be achieved with real meaning and depth in the 2-week time frame allotted. Often teachers try to cover what is in the curriculum in one unit, rather than remember that the curriculum describes what is expected to be learnt by the end of the year. Experience tells us that topics need to be revisited and extended in subsequent units of work.
- Not written in child friendly language. Instead, they simply restate the jargonistic content descriptors straight from the curriculum document and as such are not student-friendly.
- Focus on procedural, rote and surface features of the topic not the deep understandings and reasoning required to 'master' the concepts.
- Are not developmental or reflective of how to avoid misconceptions and common

error patterns.

- Have not built in any differentiation. The bracketed part at the end of a Top 5 item allow the teacher to identify the range within which different students will be working.
- Do not lend themselves to pre- and post-assessment tasks that are more than mere test items.
- Omit the vital last item which always needs to be an application or problem-solving statement, e.g., I can solve everyday problems involving fractions.

The following Top 5 demonstrates most of the above criticisms and uses the vocabulary of the content descriptors:

Fractions TOP 5











-  I can represent and interpret fractions of a shape.
-  I can represent and interpret fractions of a quantity.
-  I can model fractions and their multiples.
-  I know equivalent fractions.
-  I can count in fractions

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Notice that some of the terms will have little meaning to a student, the actual fractions involved are not differentiated and there is no reasoning or problem solving or connections with the real, world built in. It is also over ambitious.

What's in it for our students?

1. Top 5s cater for individual differences and differentiation based on kid-watching and formative assessment. They build in scaffolding and a *sting in the tail* (additional challenge) for those who need extra stretch. Not every student will have exactly the same Top 5. For some the first two items may be from the previous year's curriculum leading them into the next item on the Top 5. For one or two others there may be two extra items at the end of the TOP 5 to give them challenge possibly from the following year's curriculum or through complex problems. However, maths is not a race. Favour deep understanding over procedural or surface knowledge and do not venture into the following year's content lightly.
2. Success criteria are written in child friendly language, so, when they are shared with students and their parents, everybody can understand them, be on the same page and work together to share the learning journey.
3. Students know what they are expected to be learning and can discuss how they are progressing and the support they may need: they can set their own related learning goals and challenges.
4. Students can record their own progress on a traffic light chart matched to the Top 5 and as result see their own personal growth.

1						
2						
3						
4						
5						

They can see their success or lack thereof without needing the teacher to judge for them.

How does the Top 5 help the busy teacher?

Okay, so you have invested time and effort into creating the Top 5, what's in it for you now? The answer is "A lot"!

With the Top 5 in place it is now:

- possible to create targeted mental routines, problematized situations and strategy lessons that will be developmentally appropriate and readily differentiated,
- likely that if you do decide to you to use Pinterest, Teachers-Pay-Teachers or some other source, you will be discerning and able to select activities that will advance learning for you students rather than just be 'fun' or 'pretty',
- easier to carry out formative assessment and to pose questions to move learning forward, it is all there in the Top 5,
- possible to create a tick and flick chart so that you can track student progress and include dates as guides to pieces of work that show the evidence,
- possible to create pre and post assessment tasks so that you can *know thy impact*,
- easier to plan rich reflection questions to deepen learning and understanding,
- possible to create marking rubric for problematized situations, reflecting the top 5, and providing summative assessment,
- possible to give constructive feedback based on the identified items, e.g., "I noticed you drew a fraction diagram to sort out that problem. Were you impressed with the way you managed that?"

Teachers who consistently plan with the Top 5s have informed us that reporting on maths is really easy. The Top 5s show what students have been learning and how they are progressing. The evidence is all there – no need for last minute testing, going through maths books or making poorly informed assessments.

Top 5s in Natural Maths Resources

Top5s feature in most of the Natural Maths publications. In particular, you will find further examples of Top 5s in:

[Building Multiplicative Strategies](#)

[Early Place Value](#)

[Linear Measurement 1](#)

[Linear Measurement 2](#)

[Linear Measurement 3](#)

[Subitizing: Laying the Foundations](#)

[Conceptual Subitizing](#)

[Visual Scaffolds](#)