Using Data to Target Teaching

Effective assessment is the key to improved teaching and individualised learning

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The best use of assessment in school education is to improve teaching, not to provide summative information at the end of a teaching sequence.[1] Using skill-based rubrics that conform to certain guidelines, teachers can gain valuable, high-quality data which they can use to target their teaching at student point of readiness.[2] In this article we will briefly examine the theoretical underpinnings of the method, discussing the difference between the standard and developmental models, and the benefits of rubric use. Then we look at how to gather and record assessment data from a rubric, followed by an explanation of how to assign targeted activities based on this data. Finally, I offer a suggested method for developing targeted learning activities and provide an example of a composite rubric with a set of activities mapped onto it.

Standard vs. Developmental Models of Thinking

The majority of people, including most teachers, follow a standard model of thinking when considering the connection between learning and assessment. However, I suggest that to advance student learning, a developmental approach should be taken.[3] Table 1 (*overleaf*) demonstrates some of the differences between these ways of thinking.

Greater student growth is seen when using a developmental rather than standard model of thinking. There are, of course, challenges. Developing a culture of challenge rather than just support within teaching teams can prove difficult. Developing the teaching material and classroom management strategies to implement small-group and targeted teaching, especially in the secondary environment where this isn't common, also requires attention.

Using Rubrics

Using rubrics that conform to quality guidelines provides benefits for students, parents and teachers.[4] Students can see the domain of the skill or knowledge they're being asked to learn, and not have to infer it from written feedback. At a glance, they can see what they need to do to get better. They get higher quality feedback on their performance rather than a letter, a number or a 'Well done.' They can use assessment data as information, rather than see it as a value-laden judgement about themselves or their capacity.

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Table 1. Standard and Developmental Models of Thinking about Assessment

Standard model	Developmental model
Assessment occurs after instruction is complete	Assessment is used to improve teaching
Teachers don't question each other's data or strategies	Teachers hold each other accountable based on their data and the teaching strategies they use
Teach whole class at once, with a bit of help for the lower students and a bit of extension for the top students if possible	Targeted teaching as much as possible – ideally individually but 3–5 levels is usually sufficient
Compare students to norms and focus on what students cannot do	Compare students to criteria and focus on what students can do and what they are ready to learn next
Deficit thinking: 'Students must be at a certain year level norm and I must correct the deficits they have'	Developmental thinking: 'Assessment tells me where a student is in their development and I teach them from there'

1   Patrick Griffin and Esther Care, 'Assessment Is for Teaching,' *Independence* 34:2 (2009), 56–59.

2   ARC, 'Rules for Writing Quality Criteria' at Reliable Rubrics, 19 February 2015, reliablerubrics.com/category/assessment-rubrics/what-is-a-rubric/guidelines.

3   Griffin & Care, 'Assessment Is for Teaching.'

4   ARC, 'Rules for Writing Quality Criteria.'

5   See, for example, Peter Goss and Jordana Hunter, 'Targeted Teaching: How Better Use of Data Can Improve Student Learning,' *Grattan Institute Report No. 2015–6* (July 2015); Helen Timperley, 'Using Assessment Data for Improving Teaching Practice' (conference paper, ACER conference on Assessment and Student Learning: Collecting, Interpreting and Using Data To Inform Teaching, Perth, 17–18 August 2009).

With rubrics, parents know what their child can do and how to improve, rather than how their child compares to others. If rubrics are used correctly, parents will also see a higher level of motivation from their children, especially those at the higher and lower levels.

Teachers also benefit. Rubric use makes judgements between teachers more consistent, leading to easier moderation. The rubric provides more detailed information for reporting to parents and requires fewer individual comments for assessment tasks. The creation and use of rubrics also leads to rewarding professional discussions between teachers about what is being taught, how and why. Finally, as this article will argue, teachers can use rubric data to target teaching to where the student is ready to learn. The benefits of targeted intervention are well-documented and using rubrics enables teachers to create effective and efficient interventions.[5]

Table 2. Rubric for Year 7 History Essay about Spartan Soldiers

Knows Content		Communicates		Uses Terms and Concepts		Produces Bibliography	
3	Applies knowledge to justify beliefs	3	Writes descriptive and/or creative sentences	3	Uses history concepts correctly	3	Includes bibliography using required style
2	Describes specific details	2	Writes easy to read sentences	2	Explains some history key words correctly	2	Includes author, date and title in bibliography
1	Lists facts	1	Writes sentences	1	Uses history key words correctly	1	Refers to sources

Recording Data from Rubrics

To record data from a rubric, we need to assign numbers to each level. Have a look at Table 2 (*above*) as an example.

Because each level now has a number, it can be entered more easily into a spreadsheet for further manipulation. The spreadsheet containing this information should look like Table 3 (*below*).

Student 7 scored a '1' in the 'Knows content' skill. We know that a '1' in the 'Knows content' column is the code for 'Lists facts.' Because the rubric has been written in a way that lists increasingly difficult displays of skill, we know the student can list facts, and therefore the thing they're ready to learn next is 'Describing specific details.'

Assigning Targeted Activities

Using the information from the spreadsheet, we can now add another two columns, 'Targeted Activity 1' and 'Targeted Activity 2.' (It is up to teachers how many targeted activities they wish students to complete.)

In the targeted activities columns, we put the next (higher difficulty) level of performance. So, in this example, Student 7 would have 'Describing specific details' listed as one of their targeted activities. Students are assessed on four skills in our example, yet we have only assigned them two targeted activities. We could potentially assign them four. However, experience has shown that between one and three targeted activities is about the right amount, given time constraints and students' ability to

Table 3. Spreadsheet with Sample Rubric Data

Name	Knows Content	Communicates	Uses Terms and Concepts	Produces Bibliography
Student 1	2	1	1	2
Student 2	2	2	2	3
Student 3	2	2	3	1
Student 4	2	1	2	2
Student 5	3	2	3	3
Student 6	3	3	2	3
Student 7	1	1	1	1

Table 4. Spreadsheet with Rubric Data and Targeted Activities						
Name	Knows Content	Communicates	Uses Terms and Concepts	Produces Bibliography	Targeted Activity 1	Targeted Activity 2
Student 1	2	1	1	2	Writes easy to read sentences	Applies knowledge to justify beliefs
Student 2	2	2	2	3	Writes descriptive and/ or creative sentences	Applies knowledge to justify beliefs
Student 3	2	2	3	1	Applies knowledge to justify beliefs	Produces author, date, title bibliography
Student 4	2	1	2	2	Writes easy to read sentences	Applies knowledge to justify beliefs
Student 5	3	2	3	3	Writes descriptive and/ or creative sentences	*extension*
Student 6	3	3	2	3	Uses history concepts correctly	*extension*
Student 7	1	1	1	1	Writes easy to read sentences	Describes specific details

respond to feedback. Too much feedback is ineffective, as students can only change a few things at a time.

To decide which two of the four skills to feature in the two targeted activities, teachers should use their professional judgement. Factors to take into account when making this judgement include previous assessment or knowledge of the student, class and school curriculum priorities, and the likelihood of learning, given the teacher's knowledge of the student.

Table 4 (*above*) shows an example of a full set of assigned targeted learning activities, based on the data above. In this example, priority has been placed firstly on improving students' communication skills, then their content skills.

Note that Students 5 and 6 have been assessed at the top of the rubric in all but one skill, and so they have been assigned an extension activity. This could be something from the topic being studied, but of a more complex nature. Ideally, extension activities should involve developing higher order thinking skills.

The quickest way to determine which activities to assign to particular students is to use the filter feature of Microsoft Excel. By applying a filter to the cells in the top row, we can sort the columns one at a time and assign a particular activity to each person with a particular score for a skill. One could first sort the 'Communicates' column from smallest to largest, then quickly assign every student who scored a 1 in this skill to Targeted Activity 1, 'Writes easy to read sentences.'

Continue sorting and filtering for all skills until every student has two activities assigned to them. As mentioned, some students might score so highly they will need extension activities. However, if students are consistently scoring very highly on all rubrics, teachers should consider adding higher levels of difficulty to the rubric.

Writing Targeted Activities

Now all that remains is to create the targeted activities, and get students to complete them. This could be achieved in many different ways, depending on the nature of teaching teams.

You'll find an composite rubric example online at bit.ly/bighistoryrubric. It caters for

Table 5. Composite Rubric with Targeted Activities	
Finds authoritative source Activity	Analyses why a source is or isn't useful
Finds reliable source Activity	Discusses usefulness of a source Activity
Finds sources	Finds sources
FINDS SOURCES	**DISCUSSES USEFULNESS OF SOURCES**

history skills from roughly a Year 5 level up to post-secondary. The first page shows a large rubric that combines all the smaller rubrics that were used for individual assessments. Some skills on the composite rubric contain hyperlinks to activities that have been written for them, as shown in Table 5 (*above*). At this stage, only about a third of skills have linked activities.

The activities linked to this rubric have been created based on a template, with variations as required. The template includes the following elements:

· name of skill

· explanation of what the skill is

· text/diagram (video links would also be good) teaching the skill

· a statement saying 'Read the examples and complete the exercises'

· two worked examples

· three to five exercises for students to complete.

An extract for the second-level activity for 'Discusses the Usefulness of Source' is shown below.

Summary

A developmental model of thinking brings benefits to students, parents and teachers. Students know what they can do and where to go next. Parents can see what their children can do and how to help them, not how the compare to others. Teachers can use the data to target teaching intervention. By using assessment data from rubrics, we can assign individual tasks to different students at their point of readiness. Creating a large bank of these targeted activities in teaching teams allows schools to target teaching while keeping teacher workloads manageable.

Targeted intervention works. It is time we take the plunge into using a developmental method to implement it.

« Extract from Targeted Activity for 'Discusses the Usefulness of Source'

DISCUSSING THE USEFULNESS OF A SOURCE
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Now that you know how to analyse a source, it is time to start being able to discuss how useful the source is at answering historical questions. How useful a source is depends on what historical questions you are trying to answer. After all, an Egyptian tomb is great at answering questions about Egyptian burial rituals but not about farming practices).

How useful a source is, is based on how reliable it is. How reliable something is just means whether it is good quality and if you can trust it. Factors to think about when deciding if a source is reliable include:

- Is the evidence in the source backed up by other evidence?
    o The more evidence there is for it, the more likely it is to be true
- Is it from a believable source?
    o 'Official' sources are usually more likely to be believable (e.g. government, published book)
    o More recent sources are more likely to be believable
- Is the person who created the source an expert?
    o Experts are more likely to be believable (e.g. historians, scientists)
- Is it unbiased?
    o Examining the source, does it look like it is unfair to some group or point of view?
    o Think about the motivations of the person who produced the source

So, knowing the usefulness of a source can be difficult. We often don't have enough information to know how useful a source is, but we can try and estimate it. The most important thing is, whatever you think, back up what you are saying with evidence from the source.

Have a look at the examples and then complete the exercises in your exercise book.

Note that in these examples it is assumed that you'd previously discussed the physical description of the source, and are now moving on to analysing it.