

Promoting long-term learning progress

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How well do we help students recognise and reflect on the long-term progress they make at school?

Consider how students commonly experience learning progress in music – for example, through their engagement with the Suzuki method or the curriculum of the Australian Music Examinations Board (AMEB).

The AMEB has constructed a series of ‘grades’ through which students are able to progress. These grades extend from beginner level through Grades 1 to 8 to tertiary entrance standard. At each of these levels, the AMEB syllabus specifies in detail the knowledge and skills that students must develop and demonstrate to meet that standard of performance.

The AMEB grades are not tied to particular ages or year levels; Grade 4 piano can be achieved by a five-year old or a 75-year old. Individuals can present for assessments when they feel ready and so have a level of control over their own learning goals and progress.

AMEB grades describe and illustrate progress in different aspects of music – Music Theory, Music Craft and Musicianship. For example, progress in Music Theory includes an increasing focus on ‘the creative aspects, including harmonisation and melody writing’. From AMEB Grade 4, progress in Musicianship includes an increasing focus on ‘the aural recognition of scale forms, intervals, triad positions, motion and cadence’. Each music grade – from the Latin *gradus* for step – is a step in a learning progression. Together, the sequence of AMEB grades and their accompanying assessments make explicit what it means to make progress in music. They provide standards of performance that encourage and recognise increasing musical achievement.

Music teachers work with individuals who can be at very different points in their music learning and assist them to work towards the next level of proficiency. An AMEB certificate is awarded to candidates who meet the requirements of each grade and students receive personal written feedback to assist them to make further progress in their music learning.

The Suzuki method similarly identifies a series of ‘graduation levels’ (for example, there are 12 levels for piano). Students who meet the requirements of each Suzuki level receive a written report and a Graduation Certificate for that level. The method is underpinned by Shinichi Suzuki’s belief that, if properly taught, every child is capable of successful progress and eventually reaching a high level of musical achievement.

Contrast this with how most students experience learning progress in, say, mathematics at school.

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Students are grouped with their age peers and a mathematics curriculum is developed for each year of school. The role of teachers is to deliver this year-level curriculum to all students. At the end of each year, students are assessed and graded (using A to E or equivalent) on how well they have achieved the curriculum expectations for their year level. Those who demonstrate most of the year-level expectations receive high grades; those who demonstrate relatively few receive low grades.

The reality in each year of school, however, is that the most advanced mathematics learners are typically five to six years ahead of the least advanced learners. As a result, there is enormous overlap in the distributions of mathematics achievement in different years of school. The most advanced students in Year 7 have significantly higher levels of mathematics proficiency than the average Year 10 student, and the least advanced students in Year 10 have significantly lower levels of mathematics proficiency than the average Year 7 student. Students have widely different levels of attainment in mathematics and thus quite different learning needs.

In schools, many students receive the same or very similar mathematics grades from one year to the next. These 'grades' do not indicate steps to anywhere. More often than not, they actually disguise long-term progress. A student who receives the same grade year after year might be excused for thinking that they are making no progress at all. Worse, this approach often sends a message that there is something stable about a student's mathematical ability – they are a 'D student'.

Not surprisingly, when less advanced students are judged to be underperforming year after year, despite the progress they may actually be making, they eventually conclude that they are not good at mathematics and disengage. At the other extreme, more advanced students often achieve high grades on what, for them, are middling year-level expectations and are not challenged or extended in their mathematics learning.

So could progress in school mathematics learning be more like progress in music learning?

Imagine a set of graded assessments in mathematics that were not tied to ages or year levels, through which students could progress at their own pace and which culminated in a certificate awarded by an independent body to students who met the performance requirements of each level.

Underpinning the assessments would be a syllabus that specified in detail the mathematical knowledge and skills that students would have to demonstrate to be awarded the certificate at each level. Assessments would be conducted in different aspects of mathematics – perhaps Number and Algebra; Measurement and Geometry; and Statistics and Probability.

Together, the sequence of achievement levels and their accompanying external assessments would make explicit what it means to make long-term progress in mathematics. Rather than requiring all students to move lock-step with their age peers on the assumption that they are more or less equally ready for the same school curriculum, this approach would recognise that students are at very different stages in their mathematics learning and would be designed to challenge and extend every student. Individuals would engage with the syllabus appropriate to

their current level of attainment and some would move more rapidly than others through the certificate levels – just as in music.

An argument against this vision might be that music teachers commonly teach individual students rather than entire classes. However, in a typical classroom, students are likely to be working towards just a few different levels of mathematical proficiency. And with advances in technology it is becoming increasingly possible for students to learn at their own pace and to be assessed online when ready. Added to this, we can expect a greater proportion of mathematics teaching and learning in the future to occur outside traditional classrooms.

What is important, I believe, is that students, parents and teachers have a clear roadmap for establishing where individuals are in their long-term mathematics learning, setting appropriately challenging, personalised goals for further learning, and monitoring and celebrating the progress each student makes.

The Kumon approach to teaching and learning mathematics has a number of these features. It consists of 20 levels of increasing proficiency, from ‘counting’ to ‘advanced mathematics’. An appropriate starting level is identified for each student, regardless of their age, and individuals progress through the levels at their own pace. Toru Kumon believed that every student could learn successfully if they experienced a sense of accomplishment by engaging with tasks at an appropriate level of difficulty.

ACER is pursuing a similar approach through our [ACER Certificates](#) program. Graded assessments and accompanying certificates have been developed at five levels of mathematics proficiency (and also at five levels of reading proficiency) which are not linked to specific years of school. Certificates 1 to 3 were offered for the first time recently. Some less advanced Year 9 students, in conjunction with their teachers, set a goal to achieve a Level 1 certificate and celebrated their success. On the other hand, one Year 4 student achieved a Level 3 certificate – the highest certificate available at the time. Our experience in establishing the ACER Certificates program is highlighting the variability in students’ levels of mathematics attainment and the importance of setting meaningful but challenging targets for individuals’ long-term learning progress.

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