THE CENTER *for* TRANSFORMATIVE TEACHING & LEARNING
AT ST. ANDREW'S EPISCOPAL SCHOOL
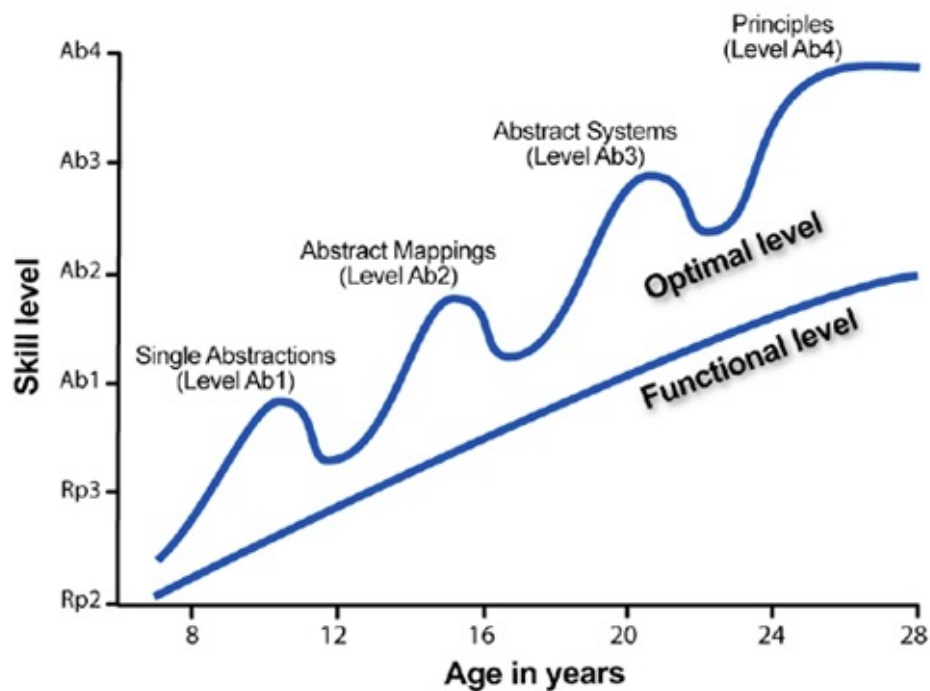
Welcome back to *The Bridge*, the monthly newsletter of the Center for Transformative Teaching and Learning. Each month *The Bridge* analyzes a specific aspect of teaching and learning through a Mind, Brain and Education Science research-informed lens.

Sometimes You Need to Take a Dip

Have you ever seen a student who mastered a concept one week, then failed an assessment on the same material the next? Have you witnessed students becoming worse at a particular skill as you continue to teach it?

Good news: this kind of slippage can be a natural part of the learning process. The Dynamic Skill Theory (DST), proposed by Professor Kurt Fischer of Harvard University, offers an explanation for the consistency and variability in students' development. DST is a well-respected neo- or post-Piagetian learning theory. It builds on Jean Piaget's concept of developmental stages that occur through the nonstop interplay between brain developmental and environmental experiences. Examine the diagram below that depicts this theory, which can and should play a role in your classroom:

First, notice that both lines go up as age increases - our ability level at any skill tends to improve as we progress through our school years. The top line is optimal growth, the maximum performance skill level that each student is able to operate at under premium conditions, i.e. with all the expert scaffolding and in-class attention that the teacher is able to provide. The lower line is functional growth, the skill level that the student is able to perform at without this ideal support, in normal everyday life conditions with all its "distractions and imperfections... [It is the] degree to which a particular skill has become stable and automatic."1 Scaffolding matters, and how we peel back or apply that scaffolding impacts the learning process of each individual student.

Secondly, notice that functional growth progresses almost linearly - the smooth growth in ability at a particular skill as the result of purposeful practice. However, optimal growth occurs in cycles, which means that at times performance decreases during the very act of learning. Students may be getting temporarily worse at a particular skill; this is a normal and everyday possibility that can occur as part of the process by which students are actually getting better at that skill. This happens because during the process of learning new abstractions are mapped on top of pre-existing ones - a process which tends not to be 100% smooth. As differences between new and old abstractions are reconciled, ability at the skill once more increases beyond previous levels due to the new complexity of the student's learning.

So what does dynamic skill theory look like in the classroom? And what does it mean for teachers?

Firstly, what about the dips? If a student is suddenly not doing well in your class, don't panic. It could be for any number of reasons, either in or outside of school, and teachers need to be aware of any and all

possibilities. But it could just be that it is a normal stage of the child's learning. The student may be in one of those stages in which they are working out that form of cognitive dissonance. But if we grade every bit of a child's day-to-day performance, these downward moments count, and the burden of required day-to-day perfection in the face of the reality of how we learn adds to a student's level of anxiety. Teachers play an important role in helping each child "stay in the game," and schools that purposefully work to create an environment where positive relationships, both between students and between students and faculty, have an advantage here. This is especially so if they have also worked to create a culture in which failure is a possible and even necessary part of learning and growth, as long as the response to that failure is a reflective rededication to further work.

The dips also have consequences for classroom evaluations. Class evaluators want to see skill levels increasing; only better performance is taken as an indicator of success. If skill levels seem to be taking a dip, clearly the teacher must be doing something wrong. Not necessarily. Dips happen.

Secondly, what about the difference between the lines or levels? The first point to note will be quite obvious to all teachers, students and parents: students tend to perform better in ideal school situations. Ideally, each student needs different amounts and alternative types of scaffolding; some students will need scaffolding added while others need it taken away. Expert teachers are able to do this simultaneously for every individual student in their class. John Hattie, in a meta-analysis of more than 500,000 research studies, said that the main difference between expert teachers and experienced teachers was automaticity - delivering just the right nugget of an intervention to each individual child at the exact time they need it but with a degree of automaticity that leaves their mind free to process the other myriad things going on in their classroom.

We might also ponder what this means for the evaluation of students. For each assessment you create, ask yourself which you are testing: the optimal level or the functional level? And which do you want to evaluate? When you look at a student's grade, what mix of optimal level evaluations and functional level evaluations contribute to that grade? Is it the balance you want? What can you do about it?

Dips happen; how you reflect on your learning and respond with the purposeful use of strategies matters most. But how do you operationalize this - what does it look like in the classroom or advisor group? Can we present this concept to students in a way that will help them understand themselves as learners? Is there a way in which we can tie the dynamic skill theory of learning to the concept of growth mindset? Please share your thoughts with us.

We believe the possibility of dips as a normal part of learning will ring true to every teacher and every student. Learning is a journey which is not necessarily easy, linear, or always upwards. It is our job as educators to guide, prod, comfort, entice and cajole each student throughout their learning experiences. Knowing that dippiness is normal is, we hope, a

reassurance to teachers. That knowledge is power; now we can plan for it, work with it and experience the dippy learning journey with our students.

Based on a talk that the fabulous Vanessa Rodriguez, author of The Teaching Brain, gave at St. Andrew's last year for the CTTL's Ideas Festival. If you want to know more about dynamic skill theory, this 8 minute video from Professor Kurt Fischer himself and this unit from Annenberg Learner's Neuroscience in the Classroom are great places to start.

1 From Neuroscience in the Classroom by Annenberg Learner, "Unit 5 Text Section 4," accessed October 15, 2016
https://www.learner.org/courses/neuroscience/text/text.html?dis=U&num=05&sec=04

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