



By: John Tapper

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At each grade level (K-8) in the United States, the Common Core State Standards (CCSS) identify 20+ standards which represent the math content that students are supposed to know and, in theory, could be tested on. Curriculum companies have worked hard to make sure that the products they provide to customers completely “cover” all the standards at a grade level. This, in addition to a focus on preparing students for testing, has led to a belief that every standard deserves the same amount of attention.

Do they, though?

Does knowing about shapes matter as much to a first grader’s math future as say, place value? Or are the concepts on additive reasoning more important to future success? I would argue that the standards that deal with understanding of numbers and computation are far more important than other standards at most grade levels. Understanding the number system and computation (not simply memorizing rules and procedures) is the gateway to algebra, which is a high predictor of college and career readiness. With this focus on algebra, knowing about numbers and computation is more important than most of the important ideas in geometry in grades K-5. It’s not that topics like geometry are unimportant, or that they should not be included in a comprehensive curriculum, but if the goal is to help students be career and college-ready, we need to focus on the concepts and standards that build conceptual understanding.

“A mile wide and an inch deep”

In their book “Why Schools Matter: A Cross-National Comparison of Curriculum and



Learning”, Schmidt and colleagues suggest that math curriculum in the U.S. is like the Missouri River, wide but not very deep. This is also an observation made in the analysis of Trends in Mathematics and Science Study (TIMSS). I’m not sure that efforts at a comprehensive curriculum are misplaced. There’s a lot of mathematics that’s interesting to explore. But math education in the U.S. seems to pursue a broader more comprehensive curriculum rather than one focused on critical concepts. The result is that topics are revisited in central instruction repeatedly across grade levels.

Surveys of teachers suggest that upwards of 60% of curriculum at a grade level is repeated from earlier grades. Further, teachers report that repetition of content in their textbooks and math programs supports relatively shallow investigation of content. The thinking seems to be that content will be covered again in later grades so students do not need to master it “the first time around.” Having large amounts of material included in programs doesn’t allow teachers to focus on the concepts that are the most important. I would assert that this is consequential for all students, but particularly for students with learning differences.

Who is focus important to?

At All Learners Network (ALN) we support the implementation of a comprehensive curriculum, with the caveat that not all standards are equally important. With the help of hundreds of teachers and math specialists, we’ve created a set of focuses for instruction for learners in preK-8. We call these the High Leverage Concepts (HLCs). These concepts identify what’s most important for students to understand at a grade level to be successful in the *next* grade.

Using the HLCs to focus on the math that matters most is important for both teachers and students. For teachers, creating focus through HLCs allows for better allocation of central instructional time. More time can go to the content that is more likely to benefit students down the road. For students, the thread of understanding computation and number sense becomes more clearly defined. Both teachers and students will see improvements in understanding when being able to focus on specific standards.

The HLCs are not only beneficial for classroom teachers. Special Educators and math interventionists also use them to help direct their work with students. These important learning support specialists have always wrestled with how to spend their limited time with students. The curriculum focus provided by the HLCs answers the question, “What should I be working on with my students?” The HLCs not only provide focus areas for a particular grade level, but they also give teachers a sense of the progression of topics across the curriculum from early number concepts through proportional reasoning.

Special educators make use of the continuum of curriculum focuses to write IEP plans and prepare instruction. A focus on the math that matters the most means that



instruction can be tailored more specifically to address unfinished learning. For example, a student must first demonstrate understanding of additive concepts, before remediation continues into multiplicative reasoning. A focus on multiplicative competence supports learning about rational numbers. With a progression of specific focused math instruction, math specialists are able to move students forward toward grade-level understanding.

For students, and especially for younger students, the experience of math instruction can be confusing. When lessons move back and forth between topics students sometimes have difficulty making connections. A clear curriculum focus, like the one laid out in the HLCs, and its consistent attention gives students the best chance to deepen their understanding as their education progresses.

I am a fan of most math curriculums that schools use to teach math in the U.S. I have always said that curriculum is not the critical component for student success. Teacher skill is the greatest factor for improving student outcomes in mathematics. An important part of that skill is engaging students in interesting and rigorous math. Not all standards are equally important. A focus on the ones that are most important will have a significant impact on instructional cohesiveness and student understanding.

References:

Schmidt, W. H., McKnight, C. C., Houang, R. T., Wang, H., Wiley, D. E., Cogan, L. S., & Wolfe, R. G. (2001). *Why schools matter: A cross-national comparison of curriculum and learning*. San Francisco: Jossey-Bass.

Polikoff, M. S. (2012). The Redundancy of Mathematics Instruction in U.S. Elementary and Middle Schools. *Elementary School Journal*, 113(2), 230–251

What Now? Scan the QR code and scroll to the bottom of the post for links to next steps



1. Check out our High Leverage Concepts (HLCs), watch our HLC Explainer Videos, and then consider these questions:
 - a. How do these resources work together to impact access, growth, and instruction?
 - b. How could you use these resources to improve access and growth for all students?
2. Read our blog “Why do the High Leverage Concepts (HLCs) Focus on One Skill?” to learn more about the HLCs.
3. Bring All Learners Network (ALN) into your school or district for embedded professional development.

