

EDU 532
It's TIME Assignment
Brian Twitchell

Imperatives for Knowledge

Mathematics Content Knowledge

Indicator	Where I was at the beginning of the Math Leadership Series	Where I am now	Next Steps
<p>“Raising achievement in mathematics for <i>every</i> student and effectively implementing the CCSSM in <i>every</i> classroom requires that <i>teachers understand the mathematics content that they expect students to learn.</i>” (TIME p. 20)</p>	<p>My mathematical content knowledge has always been pretty high. My biggest struggle as a teacher was to figure out how to explain things that made perfect sense to me, to students who struggled to understand.</p>	<p>Between the coaching courses and Math Leadership courses, I am continually adding things to my tool belt to aid in explanations of content in ways that make sense to students. It is the continuation of a journey that I started back around 2000.</p> <p>The assignment Moving through the curriculum (https://mainemathteacher.com/wp-content/uploads/2017/10/Twitchell-Moving-through-the-Curriculum-EDU-530.pdf) was invaluable in helping me understand the larger scope of the mathematics content and how it progresses through the grades.</p>	<p>This is an ongoing piece. A year ago I wrote a blog article (https://mainemathteacher.com/2017/11/22/multiplication-multiple-methods/) outlining multiplication from the youngest grades through high school, and explaining multiplication in a way that made sense - not just a mindless algorithm. I need to continue developing those ideas in other areas, such as division, but even expanding to topics in higher grade levels.</p>

Pedagogical Content Knowledge

Indicator	Where I was at the beginning of the Math Leadership Series	Where I am now	Next Steps
<p>“Raising “achievement in mathematics for <i>every</i> student and effectively implementing the CCSSM in <i>every</i> classroom requires that <i>teachers understand what teaching approaches best fit the content and how to best organize the elements of the content for effective teaching.</i>” (TIME p 22)</p>	<p>I began making a shift in my pedagogical approach to teaching mathematics in 2000, when our school adopted the high school program Math Connections, funded by NSF. I discovered in my first year that teaching like I had always taught was a disaster. Fortunately, I was able to receive some training after that first year, and soon began to better understand HOW to teach the material.</p>	<p>Much of those pieces I learned then I find still apply - group conversations, justifying your position, and working toward a conceptual understanding as a teacher, rather than just a procedural ability, are all important pieces. The work in the Math Leadership, especially the time spent on looking at MPK, helped to reinforce this. See https://mainmathteacher.com/edu-531-portfolio/ for links to resources and the research paper on MPK.</p>	<p>My job now is to find ways to communicate this to the teachers in my district. As a coach, I am in a unique opportunity to help guide them and provide them professional development in these areas.</p>

Mathematics Curriculum Knowledge

Indicator	Where I was at the beginning of the Math Leadership Series	Where I am now	Next Steps
<p>“Raising achievement in mathematics for <i>every</i> student and effectively implementing the CCSSM in <i>every</i> classroom requires that <i>teachers understand how to best sequence, connect, and situate the content they are expected to teach within learning progressions.</i>” (TIME p. 24)</p>	<p>Prior to the Math Leadership series, I had already had some exposure to the Coherence Map that connects standards together into progressions. In addition to the commonly known Coherence Map on the Achieve the Core website (https://achievethecore.org/coherence-map/), I have also used a second one that I found developed by UCLA that extends all the way through high school (http://curtismapper.pic.ucla.edu/MapApp/app/#/map).</p>	<p>Although I had knowledge of these learning progressions, the assignments that required me to develop a specific learning progression (https://mainemathteacher.com/wp-content/uploads/2017/10/Twitchell-Moving-through-the-Curriculum-EDU-530.pdf) was invaluable to helping me understand the connections between grade levels.</p>	<p>As I continue to work in the district as a coach, our work on standards at different grade levels will be enhanced by understanding these learning progressions. In fact, our district is working on curriculum in other content areas, following the model I have established in mathematics and looking at content areas as vertical teams from K - 12. “The curriculum used at a school and within a district should be based on standards that are coherent.” (TIME p. 25)</p>

Imperatives for Instruction and Assessment

Instructional and Formal Assessment Practices

Indicator	Where I was at the beginning of the Math Leadership Series	Where I am now	Next Steps
<p>“Raising achievement in mathematics for <i>every</i> student and effectively implementing the CCSSM in <i>every</i> classroom requires that teachers consistently implement <i>effective, research-affirmed instructional and formative assessment practices in every classroom.</i>” (TIME p. 28)</p>	<p>Formative assessment practices have been one of the weakest areas of my teaching and understanding. I think in large part this is due to an emphasis that was prevalent early in my career of “making sure there were enough grades in the gradebook”.</p> <p>About the time I started the leadership course I also started looking more closely into assessments in general.</p>	<p>To be honest, I want to move completely away from a percentage system that allows multiple things to make up a grade, regardless of whether those items actually measure performance on the content of the course. The Proficiency-Based Education concept makes a lot more sense to me, in that it is designed to help us determine exactly what standards and indicators a student has become proficient at. Granted this is a huge can of worms right now, especially at the high school level, but I have found that many of the elementary teachers are looking for this type of system. Finally, the Lesson Plan</p>	<p>I need to continue to refine my understanding of Marzano’s proficiency scales (Heflebower et al., 2014), and also better understand how formative assessments play a role in this proficiency scale. I also need to continue to break my mindset that any graded assignment given to a class has to be recorded in the gradebook towards the final grade.</p> <p>I am also struck by the statement “Planning should not be done in isolation.” (TIME p. 28). Although I agree conceptually with this, how do we implement such a culture when 3 different schools each have only 1 teacher in each of grades K - 5?</p>

		<p>assignment in EDU 531 gave me experience in helping a teacher implement a formative assessment activity. (https://mainmathteacher.com/edu-531-portfolio/)</p>	
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Instructional Materials and Resources

Indicator	Where I was at the beginning of the Math Leadership Series	Where I am now	Next Steps
<p>“Raising achievement in mathematics for <i>every</i> student and effectively implementing the CCSSM in <i>every</i> classroom requires <i>instructional materials that align with the mathematics content and practices of the CCSS for mathematics, create excitement and motivation, and are developmentally appropriate. These materials must support the planning, implementation, and assessment of high-quality lessons.</i>” (TIME p. 33)</p>	<p>When I started as a math coach, the program in use for K - 5 was Go Math, and for 6 - 8 was Math Connects. Go Math is a program written to the common core, but over the years I have found various weaknesses. I was encouraging teachers, from the beginning, to adjust or change lessons if they felt they had a way to better present the content of the standard being addressed. Over the years of teaching I have relied heavily on the textbook, but as I gained experience, I became more comfortable with adjusting the lessons, or leaving some out entirely, based on the needs of the student and the content in the lesson.</p>	<p>I am now moving us toward the implementation of a high quality set of instructional materials for K - 12. Currently, our 6 - 8 classes are using the new materials put out by Illustrative Mathematics. (https://im.openupresources.org/) Currently, we plan to implement the new high school materials this next fall when they are available, and then gradually phase in the K - 5 materials as they become available.</p>	<p>In order to best implement these changes, however, I have to look for ways to provide teachers training in these materials. As a coach, I can do a lot to support the ongoing work, but an initial training in the use of these materials will be invaluable. As we approach budget season, I need to advocate for money in the budget to provide this training, and then work on getting teachers to attend the trainings.</p>

Student Support Structures and Intensification Strategies

Indicator	Where I was at the beginning of the Math Leadership Series	Where I am now	Next Steps
<p>“Raising achievement in mathematics for <i>every</i> student and effectively implementing the CCSSM in <i>every</i> classroom requires <i>a variety of intensification strategies be available to teachers to support the learning needs of struggling students.</i>” (TIME p. 35)</p>	<p>Over my career, I have tried a variety of intensification efforts, with mixed success. One in particular, however, that I felt worked well was offering an “Everyday Algebra 1” course, which, as the title suggests, met every day for 72 minutes, as opposed to every other day for 72 minutes. In particular, this option meant the students were exposed to the same content and the same expectations, and at the end of the year they were at the same place in the curriculum as students in the regular Algebra 1.</p> <p>Our schools, however, do not always recognize that EVERY student can achieve at the same level, so often these solutions have been subject to the changes in budgets.</p>	<p>One of the important discussions in our district right now is that of figuring out how to implement a quality RtI program. I have become convinced that for the most part, students who appear to struggle or are behind simply need additional time to learn and process the content. In our small schools, it is difficult at best to figure out how to carve out this extra time that is needed. The strategies offered on <i>pages 77 - 78</i>, however, are well worth a discussion with the principals to see how we could implement some of these. I am particularly intrigued with the strategy “Offering Daily Outside-the-Classroom Help”, in part because I see in each of our schools a lot of time when students arrive where they are just sitting around waiting to</p>	<p>My next step on this topic is to raise the conversation with the principals. In fact, I can and should take the opportunity of my participation on the Admin-Team meetings for Academics as opportunities to raise many of the things that we should look at.</p>

		<p>go to class. If there were a way to provide math help during this time, it could be a productive use of student time.</p>	
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Summative Assessment Data

Indicator	Where I was at the beginning of the Math Leadership Series	Where I am now	Next Steps
<p>“Raising achievement in mathematics for <i>every</i> student and effectively implementing the CCSSM in <i>every</i> classroom requires that schools <i>gather, collaboratively analyze, and effectively use a range of summative assessment data to plan and implement revisions at the student, lesson, unit, and program levels.</i>” (TIME p. 37)</p>	<p>Through the math coaching project, I had been provided some tools for analyzing data. However, I had done very little with looking at data myself - partly because with 3 different K - 8 schools it could get overwhelming to decide where to start.</p>	<p>This current year the superintendent has made it an expectation for principal’s to look at data with “Data Teams” in each of their schools. This has given me a greater opportunity to look at data, as some principal’s will ask me for some specific help on how to present the data. Additionally, I have made it a point to attend some workshops on NWEA data, to become more adept at knowing what the various reports contain.</p>	<p>I need to make it a priority to dig deeper into the data, and in particular to analyze what information it gives us about our math program. One activity I did early in September was a data workshop with the K - 8 staff, where in grade level teams they looked at district level data for their grade on the NWEA. Although designed as a introduction to looking at data, staff were able to note some patterns and trends in the data. My job is to look deeper into that and help teachers figure out how best to address the weaknesses found.</p>

Imperatives for Systemic Change

Professional Learning

Indicator	Where I was at the beginning of the Math Leadership Series	Where I am now	Next Steps
<p>“Raising achievement in mathematics for <i>every</i> student and effectively implementing the CCSSM in <i>every</i> classroom requires <i>extensive and ongoing opportunities for teachers to enhance their own professional learning and to build their capacity to reach all students.</i>” (TIME p. 44)</p>	<p>I have been providing professional development in a variety of capacities as a math coach. From the district Math Think Tank, to book studies in the various schools, to Grade Level meetings, I have been looking for different ways to meet the needs of teachers.</p>	<p>Last year I ran a series of Grade Level Meetings throughout the spring, meeting with each grade span 3 times, in January, March, and May. This current year I have not yet determined the best way to provide professional development to teachers, outside of the normal coaching activities.</p> <p>However, I am struck in particular by the idea that I should “Capture and Monitor Teacher Learning Outcomes.” (TIME p. 45). Although I regularly give Learning Outcomes in my Professional Development meetings, I have not considered the idea of Monitoring those with regards to the teacher.</p>	<p>On reading this section, it occurs to me that perhaps I should focus on Grade Span meetings. I could implement an afternoon after school for K - 2 teachers and ed techs, and another for grades 3 - 5, then 6 - 8, and then high school. This would allow me to prepare content suitable for the attendees, and would also broaden my reach to include ed techs, which have not been part of all the activities that I have done in the past.</p>

Collaborative Structures

Indicator	Where I was at the beginning of the Math Leadership Series	Where I am now	Next Steps
<p>“Raising achievement in mathematics for <i>every</i> student and effectively implementing the CCSSM in <i>every</i> classroom requires <i>robust, well-functioning collaborative structures, including administrative teams, academic leader teams, and grade-level or course-specific teams.</i>” (TIME p. 47)</p>	<p>Some of these structures are much more difficult to establish within a small school district. For example, our administrative team is really also mostly our Academic Team, with the addition of myself to the group. Grade Level teams are also difficult to establish for regular meetings, when teachers work 5 - 13 miles apart from each other. With that said, at the beginning of the math leadership series I had already established a K - 8 math think tank, including representation from most grade levels, as well as all the schools. I was beginning the process of adding the high school representation at that time as well.</p>	<p>The superintendent has made it clear that I am an Academic leader, and is including me in a variety of capacities, including bi-weekly admin meetings when they discuss academic issues. My involvement actually goes beyond mathematics, and I am used as a resource for looking at data and as one leading the work on assessments. I am heavily relying on Marzano’s Proficiency Scales. A valuable resource has been <i>A School-Leaders Guide to Standards-Based Grading</i>. (https://www.amazon.com/School-Leaders-Guide-Standards-Based-Grading-ebook/dp/B00KJ59WP0/ref=sr_1_15?ie=UTF8&qid=1543357331&sr=8-15&keywords=school+leaders)</p>	<p>As I develop grade span meetings as previously described, this also gives me an opportunity to work with teams of teachers on a variety of topics, including modeling lessons, developing assessments, and helping them better understand the scope of CCSS and the Standards for Mathematical Practice. In addition, I will continue to lead the vertical team in mathematics on the development of common proficiency scales and high quality assessments.</p>

Coaching

Indicator	Where I was at the beginning of the Math Leadership Series	Where I am now	Next Steps
<p>“Raising achievement in mathematics for <i>every</i> student and effectively implementing the CCSSM in <i>every</i> classroom requires that <i>knowledgeable and trained coaches support instruction improvement and professional collaboration in every school.</i>” (TIME p. 52)</p>	<p>At the beginning of the math leadership series, I had just completed the Maine Mathematics Coaching Project at UMF (http://www2.umf.maine.edu/gadstudies/maine-mathematics-coaching-project/) and was working in the district as a coach for K - 12, although my emphasis has been on K - 8.</p>	<p>I continue to work as a coach, and am thrilled to see the recommendations in this section have been fully carried out by the MMCP. There is a clear definition of responsibilities. The MMCP provides numerous opportunities for Professional Learning. My district is highly supportive of my work as a coach. The MMCP also provides numerous opportunities for coaches to collaborate, with a Learning Lab/Dine and Discuss each semester, as well as an ongoing 2-Day summer seminar</p>	<p>Really, my biggest next step is to simply continue the membership in the MMCP, and to continue to self-reflect on the things I am doing as a coach, looking for ways to improve MY work so I can help improve the instruction from the teachers I work with.</p>

Leadership “Truisms”

When I first read the statements on page 9, I was immediately struck by how valid they seemed to me. These are important reminders for me as I work with teachers - important enough, that I plan to make these into a poster to put on my wall.

People cannot do what they cannot *envision*

This statement says to me that part of my job is to show the vision so others can see it. Specifically, the vision captured in a host of literature that we have looked at. Equity in Mathematics is perhaps the starting point (TIME p. 8). Until our teachers truly believe that ALL students can learn mathematics to a high level, we will continue to provide a mediocre program. This is particularly true in our high-poverty area, where students and parents often believe that they can never be successful in mathematics. If the teachers don't truly believe students can succeed, why would the students believe they can succeed?

People will not do what they do not *believe* is possible

This statement applies both to students and to teachers. If students do not believe they can be successful at mathematics, most likely they will not be. Jo Boaler's work (<https://www.youcubed.org/resource/growth-mindset/>), building on the work of Carol Dweck, helps to drive this home in strong ways. Additionally, we MUST have teachers who also believe their students can succeed. It's not enough for teachers to say to their students they can succeed, and then in a staff meeting lament that “Johnny will never be able to do math.” Such a teacher does not TRULY believe Johnny can succeed. We have to find a way to change TEACHER mindsets where needed - not just student mindsets.

People will not implement what they do not *understand*

This statement reminds me that many K - 8 math teachers have limitations in their understanding of mathematics. In particular, they do not view the field of mathematics as a cohesive topic, but rather view it as individual topics to teach. As such, students will come away viewing mathematical skills as disconnected and jumbled, not the coherent body of knowledge and skills presented in the CCSS. Early in my coaching career I made this a point of conversation, and it needs to be one that is revisited. Achieve the Core has some excellent resources on this topic. (<https://achievethecore.org/page/900/college-and-career-ready-shifts-in-mathematics>)

People are unlikely to do well what they do not *practice*

We all know the adage “Practice makes perfect”. I’m not sure that “perfect” is the best descriptor, because I don’t believe in teaching such a thing exists. I think we can ALWAYS find ways to do better. With that said, the principle has validity. Teachers need to be encouraged to practice these ideas of the Standards of Mathematics Practice and the Effective Teaching Practices in *Principles to Action*. For the past two years, my emphasis was been on facilitating meaningful discourse in the math classroom, while this year my emphasis is changing to the first effective teaching practice of establishing goals to focus learning. As I work with teachers this year, I am working to remind them of establishing their goal at the beginning of the lesson. Although I don’t work with every math teacher on a regular basis, those that I DO work with, if I am able to continue to remind them of this, will begin establishing that practice. This, of course, is true of every teaching practice - in order for teachers to make it a routine they need to practice it, and my role as a coach can help to implement that practice.

People are unlikely to show much progress without *feedback*

We all know that feedback to students is critically important. Teachers are students as well - and in my role as a coach, I need to work to improve the feedback I give them. When I have a regular coaching cycle, I try to schedule a follow-up meeting with the teacher. This gives opportunity for me to give them feedback. Sometimes, I also provide that feedback via email, if it’s not practical to get together.

One powerful way to help provide teachers feedback is through the means of videotaping a class. As a coach, I can likely be more successful in this than as an administrator, as I can in no way use it for evaluation purposes. In the November 2018 issue of *Educational Leadership*, an article there provides several suggestions on how to help establish a culture of videos within the classroom as a feedback and reflection tool. I have actually already sent a snip of that article to the administrative team, expressing my interest in pursuing this and asking for their thoughts.

(<http://www.ascd.org/publications/educational-leadership/nov18/vol76/num03/Spreading-the-Practice-of-Video-Reflection.aspx>).

People's efforts are unlikely to be sustained without *collaboration*

As I have mentioned earlier, collaboration within a small district such as mine is a challenge at best. Due to the rural nature of the district, finding the time for grade level teachers to get together is a challenge at best. I have found different ways to accomplish this, including grant funded Grade Level Meetings (the grant provided subs for the day), volunteer participation on the district Math Think Tank after school, and book studies that I have offered in different schools.

Nevertheless, it is clear (TIME p. 48) that establishing collaborative structures at the school and district level, as well as at the teacher and administrative level, is an important next step. In the meantime, I can continue to work to brainstorm other options, such as upcoming Grade Span meetings.

Resources

Ascd. (n.d.). Spreading the Practice of Video Reflection. Retrieved December 1, 2018, from

<http://www.ascd.org/publications/educational-leadership/nov18/vol76/num03/Spreading-the-Practice-of-Video-Reflection.asp>

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Growth Mindset Archives. (n.d.). Retrieved December 1, 2018, from <https://www.youcubed.org/resource/growth-mindset/>

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Maine Mathematics Coaching Project. (n.d.). Retrieved December 1, 2018, from

<http://www2.umf.maine.edu/gradstudies/maine-mathematics-coaching-project>

National Council of Supervisors of Mathematics. (2014). *It's time*. Bloomington, IN: Solution Tree.

Open Up Resources and Illustrative Mathematics. (n.d.). Open Up Resources 6-8 Math Curriculum. Retrieved December 1, 2018, from <https://im.openupresources.org/>

Standards Mapper. (n.d.). Retrieved December 1, 2018, from <http://curtismapper.pic.ucla.edu/MapApp/app/#/map>

The scoring rubric: 22 points

Where you were:

4 All Imperatives were addressed:

* The description for each indicator was accurately supported with data from the text and from the Math Leadership program

* The description for each indicator contained information from outside sources which was taken from the “Toolkit/Portfolio” and was so cited.

3 Both descriptors are addressed. One may have weak evidence or evidence not connected with the Imperative

2 Both descriptors were addressed. Both may have weak, inaccurate, or incomplete evidence.

1 Only one descriptor was addressed

Where you are:

4 All Imperatives were addressed:

* The description for each indicator was accurately supported with data from the text and from the Math Leadership program

* The description for each indicator contained information from outside sources which was taken from the “Toolkit/Portfolio” and was so cited.

3 Both descriptors are addressed. One may have weak evidence or evidence not connected with the Imperative

2 Both descriptors were addressed. Both may have weak, inaccurate, or incomplete evidence.

1 Only one descriptor was addressed

What your next steps are:

6 All Imperatives were addressed:

* The description for each indicator was accurately supported with data from the text and from the Math Leadership program

* The description for each indicator contained information from outside sources which was taken from the “Toolkit/Portfolio” and was so cited.

5 Both descriptors are addressed. One may have weak evidence or evidence not connected with the Imperative

3 Both descriptors were addressed. Both may have weak, inaccurate, or incomplete evidence.

1 Only one descriptor was addressed

Leadership Principles

How will you include the following Leadership Principles in your future leadership role?

People cannot do what they cannot envision

People will not do what they do not believe is possible

People will not implement what they do not understand

People are unlikely to do well what they do not practice

People are unlikely to show much progress without feedback

People's efforts are unlikely to be sustained without collaboration

- 8 All principles have been addressed with specifics, citings and actions
- 7 All principles have been addressed with specifics, and actions.
- 6 All principles have been addressed with specifics, and actions. There is a weakness or minor error obvious.
- 5 All principles have been addressed. Specifics, citings and or actions may be inappropriate
- 4 Most principles have been addressed. Specifics, citings and or actions may be inappropriate
- 3 Some principles have been addressed. Specifics, citings and or actions may be inappropriate
- 2 Some principles have been addressed. Specifics, citings and or actions may be inappropriate or in error
- 1 Few principles have been addressed. Specifics, citings and or actions may be inappropriate or in error