Stephanie Brilhart

School Building: Ben Franklin

Conference: Safety Care Training- Recertification

Date: October 19, 2018 Location: ARIN IU 28, Indiana

A. Summary of Conference Session Attended

Safety-Care Recertification is necessary to continue to implement strategies to protect students and/or staff if an escalation in behavior occurs. A review focused on how to prevent many behavioral incidents, as well as what we should do if an incident does occur. The Safety-Care model that we were trained in has been selected for distribution by the Bureau of Special Education and is designed to meet the needs of learners with language and cognitive challenges while maintaining consistency with Chapter 14 regulations.

The recertification class focused on providing safety for the individuals we work with, providing the best possible care for them, and respecting their rights while maintaining their dignity. Ways to ensure that the staff and others are kept safe was a key point in our discussions.

The A-B-C model, which illustrates how what is done in the classroom may be reinforcing challenging behaviors rather than eliminating them, was reviewed and practiced trough role-playing. Hands on activities were vital to understanding our roles in given scenarios. Preventative measures, such as learning triggers and signals, was reviewed and stressed upon. Avoiding physical management is the goal however, there are times that it may be necessary. Protective and Incident/Physical Management is to be used when there is no other safe alternative because the least intrusive- most positive approach should be the first intervention. The criteria for use of physical Management Procedures are: There must be imminent risk of serious harm to the agitated person or someone else; There must be no other practical way to prevent that harm without physical management; and the risk of not intervening must be greater than the risk of threatening.

B. Reflection on Conference Value

This training continues to be extremely beneficial for myself as well as our team to attend. The goals of Safety Management were clearly expanded upon by the facilitators. I feel confident in knowing that I am trained to prevent behavioral crisis, reverse escalation of crisis behaviors, teach and strengthen behaviors that are incompatible with the crisis behaviors, safely and therapeutically manage a crisis without injury, and end the crisis as quickly as possible. Practicing some of the de-escalation skills presented will be helpful in all academic settings. These strategies will aid with the intervention of any students who are exhibiting challenging behaviors. By using these approaches, quality of care and quality of life for students with significant learning and behavioral challenges can be enhanced substantially.

Brad Trout School Visit to Greater Johnstown High School November 1, 2018

5th grade Math

Johnstown, PA

We met with the administration of the Greater Johnstown High School. They gave us an overview of Summit Learning, their personalized learning model. We discussed the positives and the negatives of their implementation process over the past two years. We compared this to the experiences that we have had here in Indiana. We were then able to visit various classrooms that are using Summit Learning. We visited an English, mathematics, science, and social studies classrooms. We spoke with the teachers and the students and asked them their opinions of the learning platform. We then came back together to discuss our notes. Johnstown's Summit program had some issues, but overall they were able to overcome the difficulties of convincing the public of the merits of this program.

I think Indiana can learn a lot about how to present and implement a new program like this. Two keys to Johnstown's success were implementing it in the high school and making it an option instead of a requirement. We also need to be very clear to the public as to what Summit is and how it can benefit the students.

Faith Newman

Science Teacher

Summit Fall Convening
October 25-26

Newark, NJ

A: Sessions attended:

Academic Data and Targeted Action

We worked in our teams to gather and analyze course data - we looked at our school wide goals for Summit/Non Summit students.

We looked at content areas to see how they fit into school wide goals. For example: if goal includes power focus areas then the teacher would look at the platform to identify patterns of who has passed, who has not passed, how many times content assessments are attempted, etc. This information was used to identify successes and areas of growth and identify our top priorities. We identified that we had to encourage our learners to utilize the playlists and take notes. Students that accessed more information were more successful.

Systems that Develop Self Directed Learning (SDL) Skills and Enable Timely Check-ins

See it: Deep Dive Example - SDL environment to identify high-impact strategies/routines. Name it: Stamp key understandings - from example through share-out and discussion. Do it: Complete final product - with practice/feedback: create your SDL action plan.

The introduction focused on The Why: Arc of the Year. Many students come in ready to go at the beginning of the year and then start to fall off in productivity as the novelty wears off. We want students to have what they need for life and building self direction builds habits of success. Three ingredients for self-Direction are a productive environment, habits development, and personalization.

Effective scaffolds/supports are appropriate based on data and the zone of proximal development, or ZPD, which is the difference between what a learner can do without help, and what they can't do. This may be tricky to identify for some learners so that they are challenged but not frustrated.

Resources available within the Summit Learning Platform include: Tips for Timely Check-ins, Study Smarter not Harder Flowchart, and Learning Strategies Page which are all visible to both students and teachers.

Focus Area Workshops

At times, workshops may be necessary in order for learners to pass focus area content assessments. Effective workshops: are informed by data, use transferable strategies within classes, and teach learning strategies and content or cognitive skills. Workshops are not just for students who struggle; they could also be for students who need acceleration.

Some of the suggested strategies included:

Turn objectives into questions which changes the way that students view them making them easier

Gradual Release - scaffold learning strategies and reduce scaffolding over time

Focus Cognitive Load - scaffold other parts of process that are not the target of the workshop

Clarify Content - provide support in understanding disciplinary content when needed

Using Data to Customize

Student needs drive the learning process. Teachers monitor all throughout the project.

The Learners Tab allows you to create groups and assign resources on the Plans tab to the whole class, the groups you develop, or individual students.

Using data to customize timeline:

Before launching a project, you can consult previous cognitive skills, IEPs, 504s, ELL scores, and MAP data

Before, during, and after checkpoints, you can consult pre-assessments, checkpoint data, and focus area data

Submitting and revising final products, you can consult red & yellow indicators and project submission.

Learners Tab: You can assign students to groups based on cognitive skills, focus areas, and foundational skills.

Click on the project and the Learners Tab will be accessible. The presenters stressed how essential data is to customizing learning.

Scoring as a Tool for Equity

When we accurately score, we accurately determine student needs and can provide appropriate supports. Summit project rubrics are different than what most, if not all teachers, have used because they focus on skills rather than content. Most teachers need to spend considerable time becoming familiar with the rubric, explaining the rubric to students, and even more time using the rubrics.

To be an equitable grader, teachers need to "Beware of Biases": setting the bar low at the beginning, shiny or extraneous distractions (very creative or super neat or very long written passages), perceived effort or intentions/mistaking scoring for grading.

There is a resource called "Principles of Student Work" that is helpful on reminding teachers how to stick to the rubric, focus on what the student DOES not what the student DOES NOT do, trust evidence not intuition, and knowing the rubric.

I worked with other science teachers looking at projects and scoring them. We shared ideas on how to streamline the process of grading and how to avoid grading biases.

Student Steps that Lead to Passed Content Assessments

We all want students to pass content assessments without too much difficulty. This is at the heart of the mission of the Summit Learning Platform.

Students build cognitive skills, content knowledge, and habits of success through project time and SDL, however, they build stronger cognitive skills and content knowledge through project time and more habits of success through Self-Directed Learning time.

Do students know how to use different study strategies? Most students do not. They need to be given guidance by the teacher.

Use the Learning Strategies resource--the different sections are color coded to match the SDL cycle.

B. Reflection on conference value:

Since we are using the Summit Learning Platform, it is helpful if not necessary to have ongoing training by Summit staff. There is also quite a bit of value in having a chance to talk to teachers from other schools to hear what is working and to bring back ideas which may be useful to us in Indiana. I appreciate having the chance to attend the Fall Convening.

NAME: Krista Sevajian POSITION: Assistant Principal

CONFERENCE ATTENDED: NISL, Unit 3: Elements of Standards- Aligned Instructional

Systems

DATE(S): 11/01/18, 11/02/18 LOCATION: Edinboro, PA

A. Summary of Conference Sessions:

Prior to this unit, we engaged with NISL's Conceptual Framework for Strategic Thinking in our first unit, which focused on the educational context, and in our second unit, which centered on context, vision, strategy, and decision-making. NISL emphasized, in this unit the elements of a High-Quality Standards-Aligned Instructional System. As leaders, we must concern ourselves with creating the best conditions for children to learn at high levels of achievement. Proven instructional practices and sustained leadership, according to the case studies and teachings in this unit, are highlighted as the core of high quality instruction.

We learned and applied the elements of "The NISL Wheel," which describes school as an aligned and coherent system that can be described using criteria organized into the following six categories:

- High-Quality Aligned Instructional Systems
- High-Quality Teachers and Teaching
- High-Performance Organization and Management
- Performance and Information Management Systems for Resource Equity
- School Ethos and Culture
- Connections to the World Outside of School

In the center is a single objective: getting all students to the point at which they are genuinely ready to be successful in college, if they choose to attend, and in the careers they choose for themselves.

In this unit, Elements of Standards-Aligned Instructional Systems, I explored in some depth, each of the elements of the first area of *The NISL Wheel*, "High-Quality Aligned

Instructional Systems," and examined the tools for analyzing each element within those systems. This unit provided many opportunities to discuss and assess instruction in our classrooms as well as the alignment of elements such as formative assessments keyed to progressions and summative assessments based on standards and curriculum. We acknowledged what we believe is our own authority over each of the elements, and started to plan how best to make the elements coherent and aligned.

B. Reflection of Conference Value: Explain how the conference aligns with district initiatives, programs, and instruction.

Mr. Vuckovich speaks to our administrative team in terms of the 9 Building Blocks of a World Class Education System as defined through NISL. NISL uses thoughtful, researched approaches to identify context, determine vision, while creating a strategic plan to initiate and follow through.

The 9 Building Blocks:

- 1. Provide strong supports for children and their families before students arrive at school.
- 2. Provide more resources for at-risk students than for others.
- 3. Develop world-class, highly coherent instructional systems.
- 4. Create clear gateways for students through the system, set to global standards, with no dead ends.
- 5. Assure an abundant supply of highly qualified teachers
- Redesign schools to be places in which teachers will be treated as professionals, with incentives and support to continuously improve their professional practice and the performance of their students.
- 7. Create an effective system of career and technical education and training.
- 8. Create a leadership development system that develops leaders at all levels to manage such systems effectively.
- 9. Institute a governance system that has the authority and legitimacy to develop coherent, powerful policies and is capable of implementing them at scale.

NISL Unit 3 applied the learning as described in the summary through the lense of the 9 building blocks of a world-class education system. The reality check that I received by participating in this learning was invaluable and eye opening. We defined our current state in a survey that I completed as pre-work for the course. When I analyzed the information from the survey, I noticed and felt empowered about the various gains we could make, if we choose, in the 9 areas. Although the results felt overwhelming, because I wanted to believe they would show that we are closer to the mark of what world-class education systems are, I focused on the power that we have together to provoke the necessary changes that can be made.

The area of focus that applies directly to the instructional leadership practices that we are learning to build within our administrative team that made the greatest impact was how to create

a world-class, highly coherent instructional system. How are we using and applying information from formative assessments to key student progressions? Developing a systemic approach to assessment and analysis of assessments to identify student progressions while strategically planning from the results and discussions that occur. Do we have a plan for common assessments and the information that can be gathered about the coherency and consistency of the curriculum and the instruction?

The questions and outcomes from NISL Unit 3 took some time to process and sort out. The Junior High School has a goal of defining and creating what Personalized Learning looks like for the Indiana Area School District. Upon the completion of my learning in Unit 3, as a portion of my Action Learning Project, Dr. Minnick and I organized a leadership team within our school to open the discussion and clarify next steps of this process together. Our first collaborative session was held on November 5, 2018 with a team of 6. We look to expand, share, and inspire people to contribute, envision, and plan for what education could be!

NAMES: Barbara Peightal and Elizabeth Woods

POSITIONS: Technology Teacher (Grades 4 & 5) and Gifted Support Teacher

CONFERENCE ATTENDED: Coding With Robots

DATE: November 1, 2018 LOCATION: ARIN IU 28, Indiana, PA

RESUME:

A. SUMMARY OF CONFERENCE

This workshop was presented by Lori Rodgers who is the Education Technology Coordinator at ARIN IU 28. We had the opportunity to work with three types of robots at this workshop: Dash and Dots, Spheros, and Ozobots. We also utilized several websites, but were especially impressed by csunplugged.org and the instructional resources provided there.

We liked working with the Ozobots due to the simplicity for getting started with this resource and the great amount of flexibility in designing a program. The Dash and Dot robots could be problematic at our buildings because the robots worked best with an iPad or iPhone controller which may not be readily available. The Sphero robots didn't all connect properly so we had limited success using them.

All robots we worked with will allow students to "program" instructions for the robot to execute. A concern that we share regarding the use of the programming robots is how much actual coding is happening for the students. While using these robots, users are sequencing steps and actions for the robots to carry out, but this is happening through drag and drop commands. We would like our students to see more of how those commands are created in a programming language rather than using/manipulating commands that are already started.

The following link was shared with us from Mrs. Rodgers which was her reference document for today's workshop. https://docs.google.com/document/d/17ZWF-45kF45tSKWWyxbu-HiL24l5yr40J0iueb3bjso/edit?ts=5bdb0d19

B. REFLECTION OF CONFERENCE VALUE

This workshop was beneficial to us. Our goal is to use the elements shared at this conference for in-house field trips for our gifted students in grades 1-5. We want students to realize that they can be creators of technology rather than just consumers of technology. Since we attended this in-service we are now on a list of teachers who are allowed to sign out the Ozobots, Spheros, and Dash and Dot from Arin IU 28. Thank you for the opportunity to attend this conference.

Mark Morrow School Visit to Greater Johnstown High School November 1, 2018 5th grade ELA

Johnstown, PA

We met with the administration of the Greater Johnstown High School. They gave us an overview of Summit Learning, their personalized learning model. We discussed the positives and the negatives of their implementation process over the past two years. We compared this to the experiences that we have had here in Indiana. We were then able to visit various classrooms that are using Summit Learning. We visited an English, mathematics, science, and social studies classrooms. We spoke with the teachers and the students and asked them their opinions of the learning platform. We then came back together to discuss our notes. Johnstown's Summit program had some issues, but overall they were able to overcome the difficulties of convincing the public of the merits of this program.

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Philip Palko Tennis Coach
USTA Middle States Tennis Summit
October 25-26 King of Prussia, PA

Summary:

The USTA Middle States Tennis Summit brought together coaches and tennis providers to share information about growing the sport of tennis. Sessions were geared to allow networking opportunities as well as provide relevant updates in a variety of areas including:

- Using USTA Tennislink to Run and Plan Tournaments
- USTA Schools Programing: Net Generation
- Examples of Effective Programs in Schools
- Review of Federal Law and Legal Responsibilities pertaining to coaches

The Net Generation programming is the USTA's latest effort to make tennis more accessible to young players. There is an online portal and special equipment for younger players. Schools can sign up and receive free equipment and materials.

I presented for a session on Effective Programming in Schools as an example of a coach that focuses on growing tennis in an area that lacks other resources such as a private racket club. The IHS tennis teams have been very successful as both teams have large participation rates and have had tremendous on court success as well.

The legal presentations were very useful as a continuing reminder of the time in which we live. It was emphasized that policies regarding a variety of player-coach interactions need to be in place and followed. Locker room policies prohibiting cell phone usage, guidelines for coach-player communication and travel policies were discussed.

Refection:

Having the opportunity to present to one's peers was an awesome opportunity for me. I've always prided myself in doing everything I can to provide the athletes at IHS the best experience possible and it was rewarding to talk about how I am able to do that. The USTA is very committed to providing resources to schools and I'm hoping to offer training in the future to elementary PE teachers so that they can include tennis in their instruction. The networking opportunities at this conference were tremendous as I was able to connect with coaches throughout the region and discuss with other tennis professional how to best grow tennis.

Gerald Smith Summit Fall Convening October 25-26

Math Teacher

Newark, NJ

Below is a description of the sessions I attended at the October 25-26 Fall Convening for schools involved in Summit Learning.

The 16 Habits of Success

INDEPENDENCE AND

MINUSETS for self

SUSTAINALILIEN

PERSEVERANCE

and school school readiness

HEALTHY DEVELOPMENT

Opening Session -

This session set the tone for the conference, encouraging participants to identify our own position on the ladder of success, and to not to be distracted by the "Tyranny of Now," and focus on the <u>Power of Yet</u>.

Academic Data and Targeted Action:

This session focused on looking closely at our school's

data, identifying trends, and particular areas where students need support, and planning a course of action for intervention. Our data set consisted primarily of students' results in focus areas across the curriculum. We identified particular students that were behind in more than one area, and committed to bringing back suggestions for interventions to the broader team. The suggestions that we discussed ranged from mentoring conversations to planning for small group seminars on a particular concept (i.e. scale figures). The goal is to not only address barriers in understanding for the concept (like how to deal with a fractional scale factor) but also to find out if there are habits of success that could be improved.

Our small team also discussed school wide goals that included establishing strong data metrics for this year by using the NWEA test.

Reflection: Our team has regular norms for ongoing data analysis. Our team's teachers are able to work within the schedule to continuously review and act on our data. The layout on the platform simplifies this process.

Facilitating Mathalicious Activities (Part 1):

This was the first in a series of math-teacher focused workshops. <u>Mathalicious</u> is an online curriculum that is featured as activities throughout the base curriculum offered by the Sumit Classroom. These problems are real-world lessons that challenge students to think critically about the world. Their lessons encourage students to use math as a tool to understand real world applications. In this particular session we did a 9th grade lesson on wages which addressed the idea of a minimum wage, covering Common Core Standards Standards on algebra and Functions, as well as three important mathematical practices

- Construct viable arguments, and critique the reasoning of others.
- Model with mathematics.
- Use appropriate tools strategically.

Reflection: I have facilitated a few Mathalicious activities in Grade 6, and Grade 7. The activities follow the philosophy that good application problems use math to understand the real world, rather than the opposite.

The Structure of a Summit Math Unit & Portfolio Time Demo

This session reviewed the structure of a Summit Math Unit, and in particular teaching the Portfolio problems.

Starting in 2018-2019, Math Units are organized into three sections.

Concept lessons emphasize conceptual understanding. These are what happens mostly during class. These consist of real world applications, as well as conceptual explorations of main topics. Both Common Core Standards, and Mathematical Practices are identified.

Exercise sets and focus areas support development of procedural skills and fluency. Exercise sets are new to Summit Math this year. These look like traditional homework worksheets that emphasize understanding a concept before the procedures. Focus Areas continue to include content skills.

Portfolio problems provide opportunities for application and deeper learning. These are new to Summit math this year. These represent an intentional structure for taking learning deeper, as opposed to the breadth often emphasized by mile-wide, inch-deep curricula.

Key differences in the redesign include:

- The elimination of Performance Tasks, Projects, and the shared Cognitive Skills Rubric
- The addition of End of Unit Assessments, Exercise Sets, and Portfolio Problems.

Portfolio Problems and Time:

The remainder of this session focused on Portfolio problems, and designing norms for Portfolio Time.

The structure of a summit Math Unit Students take the assessment Students learn math in concept lessons by Students choose from a menu of ncts. during the last period of the unit doing math problems, often collaborativel and facilitated by the teacher through a Launch-Work-Wrap Approach. and can take alternate versions later to exprove their scores. that take the unit's concepts deeper Portfolio Problem 42 End-of-Unit nory Event Concept Lesson Concept Lesson Concept Lesson Concept Lesson Assessment Portfolio Problem #3 Exercises Exercises A herst picked small group works with the teacher to shore up the math of the unit thus far. The flexibility of this structure allows the teacher to Focus Area Students practice using rely work with a different group each time procedures through Content ercises, or exercise sets, Playlist of Resources Assessment during SDL or for homework Shidents direct their own learning through a Skills are spaced out over playlist of resources to prepare for an online content assessment related to that unit's content time and intermixed

The Problems: Most portfolio problems fall into one of three categories:

- An application problem that uses the related topic in a context
- A puzzle or challenge that requires engaging with the topic in a new and often more complex way.
- A dive into a related but slightly adjacent topic not covered in the standard curriculum.

Each lesson includes 4-5 possibilities, students have the option of choosing two to complete.

Portfolio Time: This is a structured day where students are to be working on Portfolio Problems. The session emphasized that teachers set norms for portfolio time where students understand that this is a work time, and that they are expected to make progress during that time.

Reflection: Given the redesign of the Summit Math units this year, this was a very helpful session for me. The rationale behind the shifts make sense to me. It seems the projects and performance tasks have been

replaced with portfolio problems. I am working on using both the provided End of Unit Assessment, as well as optional projects.

Incorporating the Five Practices

A key to successful execution of the Summit Math Unit is for the teacher to be able to maximize on student engagement during the Concept Lesson part of class. A framework for this is called the Five Practices. They are:

- 1. Anticipating predicting how students might approach a task
- 2. Monitoring listening to students' strategies as they work
- 3. Selecting strategically choosing students to share their work
- 4. Sequencing making decisions regarding the order in which students share their work
- 5. Connecting helping students draw connections among their solutions, others' solutions, and key mathematical ideas.

The session presented a few case studies where we identified the 5 practices in action. We then made a plan of action for an upcoming lesson of our own, focusing on the first step: Anticipating what might be students' ideas, and making an initial plan for how we might sequence them.

Reflection: This is a difficult yet essential skill to see in action. In advance of the lesson, it requires problems that allow for multiple interpretations and solutions, then expertise on possible answers. Then during the lesson the classroom culture must be one of comfort and exploration, and the teacher needs to be able to move around from group to group, completing steps 3-5 in real time.

This type of lesson typifies what I see as a fundamental difference between a personalized math class, and a traditional one. In a typical lesson, a math teacher will likely be anxious that at the end a conceptual lesson that a particular procedure or skill hasn't been identified as what students should be able to do. In a personalized class, specific time is dedicated to practicing these procedures, which allows the end of a concept lesson to be focused on the concept.

Mathematical Language Routines

This session focused on Mathematical Language Routines (MLR) designed to help teachers recognize and support students' language development processes in the context of mathematical sense making. These 8 MLRs, are listed to the left. During the session, we analyzed different case studies to see which MLRs were in use, and how they helped students develop language within the context of mathematical sense making. Each MLR has different types of activities that can elicit the routine. For example, an activity where

MLR1: Stronger and Clearer Each Time

MLR2: Collect and Display

MLR3: Critique, Correct, and Clarify

MLR4: Information Gap

MLR5: Co-Craft Questions and Problems

MLR6: Three Reads

MLR7: Compare and Connect

students have to declare various mathematical statements were Always, Sometimes, or Never true could employ both MLR3, and MLR7. An activity such as Notice and Wonder could involve MLR4, MLR5 and MLR7. Other examples are here.

The session presented MLRs as a natural result of the curriculum design principles stated below.

Design Principle 1: Support sense-making

Design Principle 2: Optimize output

Design Principle 3: Cultivate conversation

Design Principle 4: Maximize linguistic and cognitive meta-awareness

Reflection: I like all of this. The theoretical background to activities such as <u>Dan Meyer's Three Act Tasks</u> is important. The focus on language development activities such as described in this session coincides with PD work I've done at IASD through the Penn Literacy Network and the Pennsylvania Institute for Instructional Coaching starting in 2014, predating the primary resource from this session, <u>a 2017 Stanford study</u>. These are routines that are regular in my classes, and are promoted by many of our colleagues.

How to Implement Guided Math Groups

Guided math groups provide a structured opportunity to provide strategic support for students at intentional moments within the unit. In this session, we reviewed the facilitation of an effective guided math groups. They are small group, focused on one or two concepts, and last less than 20 minutes.

These groups should be inclusive of all students and meet topics as identified through formative data assessment. These Guided Math Groups are also a new feature of the 2018-19 redesign, and are the small red slip under Portfolio Time. The idea is that these could happen during Portfolio Time.

Reflection: The framework Summit provides to include inclusive, small, focused, group work is important as it demonstrates another commitment to using data to personalized instruction. This type of structure is entirely consistent with classrooms with rotations, or station learning.

Two Big Takeaways:

1. What is Personalized Learning?

It's my belief that at least the following two aspects are essential for a personalized math class,

- 1. Great lessons focused on concepts,
- 2. Dedicated time in addition to regular class for individualized work on content and procedural skills within a data rich environment.

The math track at this year's conference allowed me to focus on planning and delivering great lessons and great curriculum that fits into a comprehensive framework of personal support for students. Most sessions I attended were delving and describing what I have considered great math teaching for most of my career. The philosophy behind Summit's base curriculum focuses on the best of the common core state standards, and effective mathematical teaching practices from the National Council of Teachers of Mathematics. As a Desmos Fellow in 2016 I had the opportunity to meet Dan Meyer and have continued to draw on his and others work that focuses on great teaching. These great lessons encourage individual exploration, and allows for multiple intelligences and abilities to access the mathematics. These "low floor, high ceiling" activities allow teachers to personalized instruction to exactly where students are, and then bring them either forward, or laterally by sharing work of others.

What makes this possible during class time is Summit's structure of moving much of the procedural learning to their "study hall," aka Student Directed Learning class (SDL, formerly PLT) These are the Focus Areas which have a large individualized component. The data from this procedural work not only

allows teachers to adjust and personalize instruction on a particular procedure, but also informs classwork routines, groupings and instruction.

2. What are good application problems?

Most so-called application problems don't actually teach students anything about the real world. Most are in such a hurry to get to a particular procedure that students often learn to skip the content, and just pick the right number. For example:

Jack has a 2.5 cup milkshake and drinks half of it before it melts. Jill has a 2 cup milkshake, drinks a quarter of it, and then gives the rest to Jack. How much do they both drink?

This problem requires no knowledge of milkshakes, and certainly doesn't provide any new knowledge about milkshakes. It uses the world to understand the math. Good applications do the opposite.



"Are we using math to look at the world, or are we using the world to look at math?" @SummitPS #fallconvening @Mathalicious #iteachmath Good applications teach kids to use math as a tool to see the world.