



Professional Learning Communities,

Strategic Plan Goal I, and the Common Core State

Standards

Norms

Cellphones

Sidebar Conversations

Parking Lot

Breaks

Respect Diverse Viewpoints

Restrooms





Agenda

9:00 - 10:30

Break

10:40 - 12:00

Lunch

1:00 - 3:00





Clock Buddies

Make an appointment

12:00 - someone with same color of hair

3:00 – someone from a different grade cluster (elementary, middle school, high school)

6:00 – someone from the same grade cluster but different school

9:00 – someone from your school







http://www.youtube.com/watch?v=U-iyBsaehn8

Teamwork





Teamwork

"Alone we can do so little; together we can do so much."

- Helen Keller

"Remember, upon the conduct of each depends the fate of all."

- Alexander the Great

"In union there is strength."
- Aesop

"Teamwork: simply stated, it is less me and more we."

- Unknown





Are These Professionals?

- I. Airline pilots
- 2. Surgeons
- 3. Attorneys
- 4. Architects and engineers

Are there times they work alone?

Are there times when they work as a team within their profession?





Are These Professionals?

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Are there times they work alone?

Are there times when they work as a team within their profession?

We must let go of the image of the teacher as king/queen of his/her kingdom (Rick DuFour, 2012)





The Mayo Clinic

"The needs of the patient come first," and we will meet those needs through "the practice of team medicine" and "unsurpassed collaboration" (Mayo Clinic Mission and Values)

As Berry and Seltman write (2008):

"In the Mayo Clinic, teamwork is not optional – it is mandatory" (p.51)

"Patients don't get a doctor; they get the expertise of the entire organization" (p. 50)

"Collaboration, cooperation, and coordination are the three dynamics supporting the practice of team medicine at Mayo Clinic" (p.65)





Grand Rounds

Grand rounds are an important teaching tool and ritual of medical education and inpatient care, consisting of presenting the medical problems and treatment of a particular patient to an audience consisting of doctors, residents and medical students. The patient was traditionally present for the round and would answer questions; grand rounds have evolved with most sessions now rarely having a patient present and being more like lectures. An actor portrays the patient in some instances.

Grand rounds help doctors and other healthcare professionals keep up to date in important evolving areas which may be outside of their core practice. Most departments at major teaching hospitals will have their own specialized, often weekly, Grand Rounds. Attending Grand Rounds is also an important supplement to medical school and on-the-job resident training. (Grand rounds can also be distinguished from rounds which is the (typically) daily visit by the attending physician and team to all that physician's patients on the ward. Rounding with an attending physician is an important part of medical on-the-job training and education, but its primary focus is immediate care for the patients on the ward. Grand rounds tends to present the bigger picture, including experience with patients over many years, and the newest research and treatments in an area. Grand rounds tend to be open to the entire medical professional community, whereas rounds are specific to individual attending physicians and their teams).



Why Collaborate?

Group IQ

"There is such a thing as group IQ. While a group can be no smarter than the sum total of the knowledge and skills of its members, it can be much 'dumber' if its internal workings don't allow people to share their talents."

- Sternberg (1988)



Why Collaborate?

- Gains in student achievement
- Higher quality solutions to problems
- Increased confidence among all staff
- More peer support of strengths and accommodation of weaknesses
- Ability to test new ideas
- More support for new teachers
- Expanded pool of ideas, materials, and methods

- Little (1990)



School Improvement

"When you talk about school improvement, you are talking about people improvement." (Sparks, 1984)

"The worlds best school systems focus their school improvement initiatives on creating conditions to improve the professional practice of educators." (Barber & Mourshed, 2007)



School Improvement

The worlds highest-performing countries in mathematics or sustained educational improvers — Singapore, South Korea, Chinese Taipei, and Japan — allow significant time for mathematics teachers to collaborate and learn from one another (Stigler & Hiebert, 1999; Barber & Mourshed, 2007)

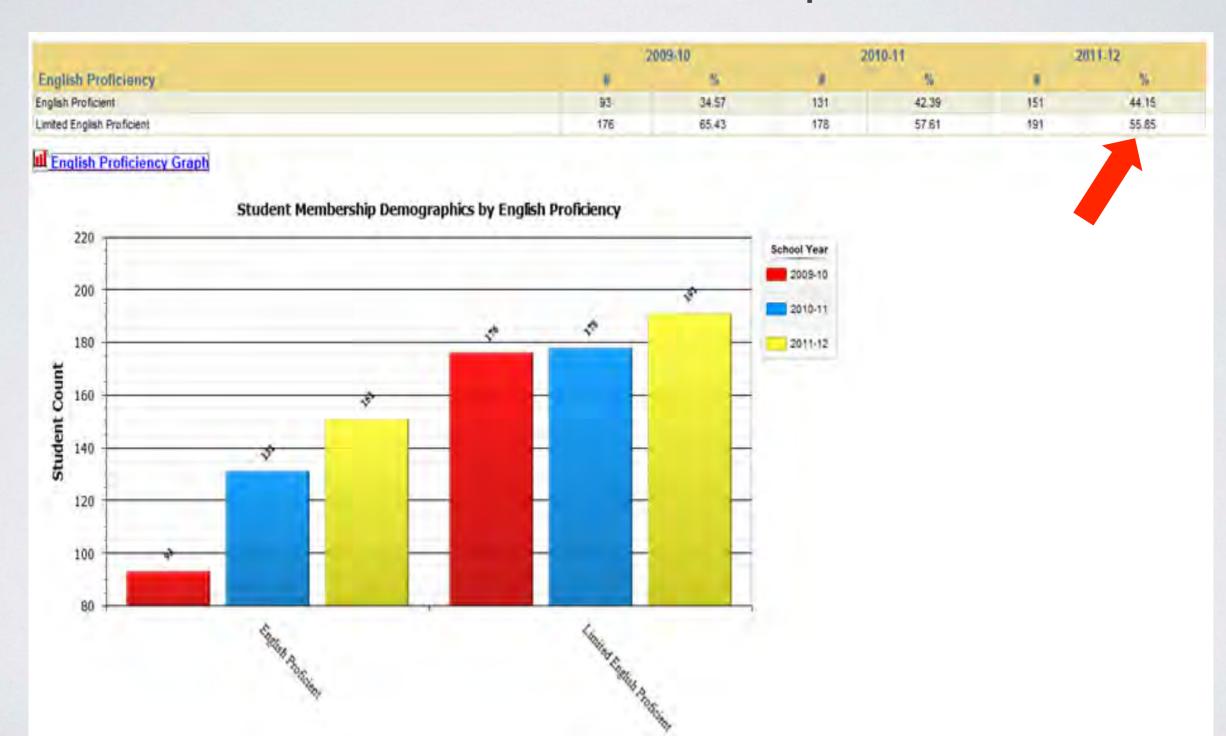
"The best environment for great teaching and leading is a powerful PLC." (DuFour & Marzano, 2011)



"School systems around the world that move from great to excellent facilitate school-based learning communities to create peer-led support and accountability to each other."

-Mourshed, Chijiole, & Barber (2011), How the World's Most Improved School Systems Keep Getting Better.



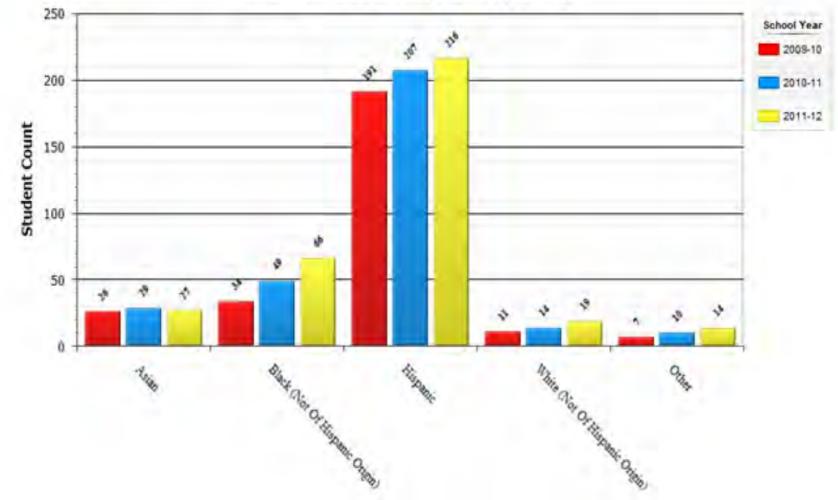




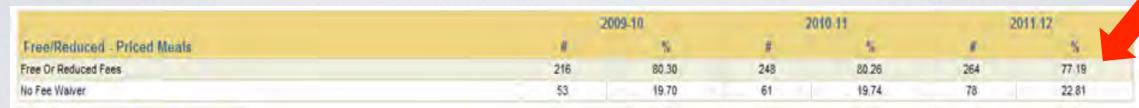
Ethnicity	2009-10		2010-11		2011-12	
	#	- %	#	%	#	1/4
Asian	26	9.67	29	9.39	27	7.89
Black (Not Of Hispanic Origin)	34	12,64	49	15.86	66	19.30
Hispanic	191	71.00	207	66.99	216	63.16
White (Not Of Hispanic Origin)	11	4.09	14	4.53	19	5.56
Other	7	2.60	10	3.24	14	4.09

III Ethnicity Graph

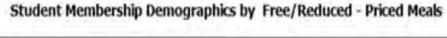
Student Membership Demographics by Ethnicity

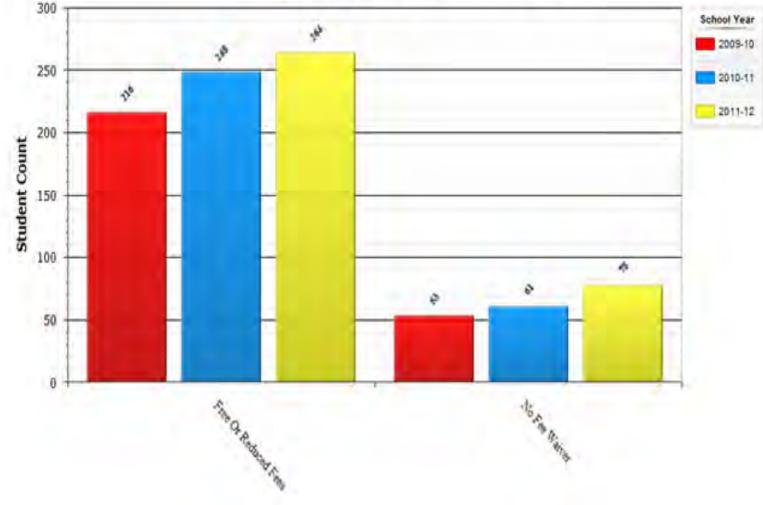




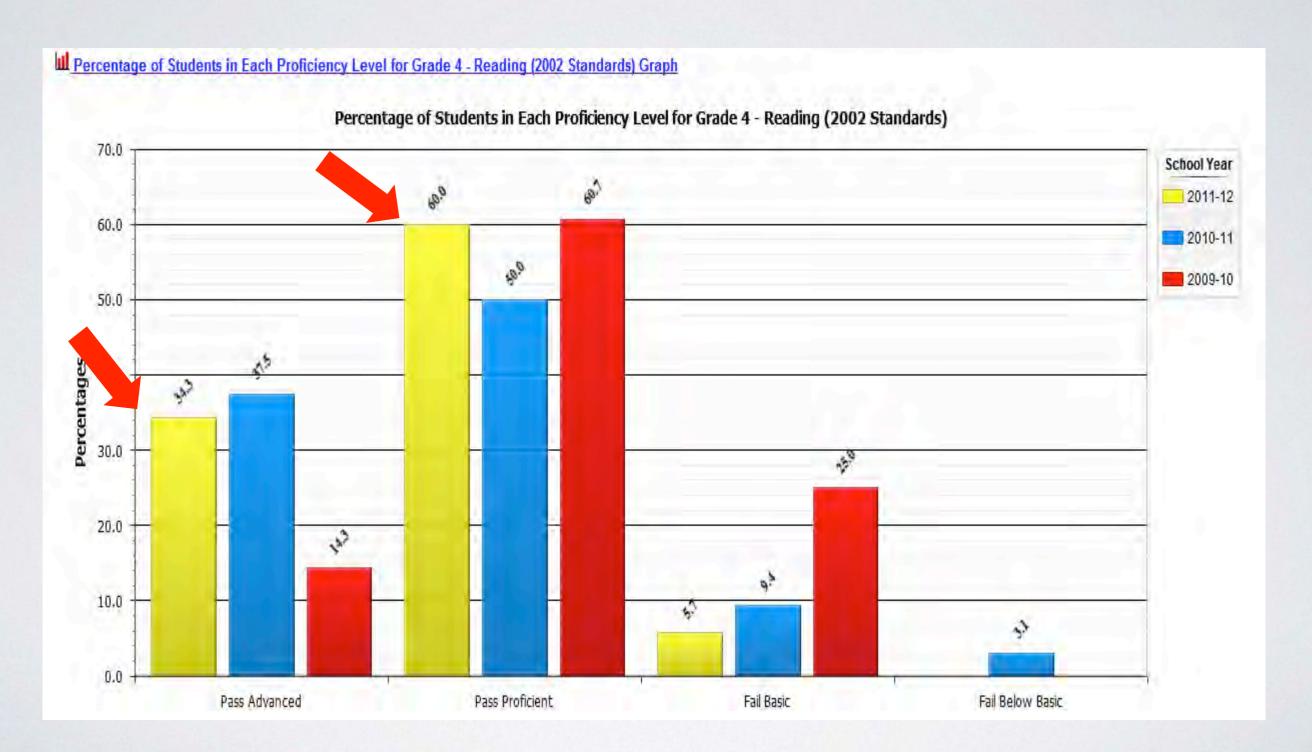














SCHOOLS



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Mount Eagle Elementary School



6116 North Kings Highway, Alexandria, VA 22303 | Main Phone: 703.721.2100 | Fax: 703.721.2197 | Attendance: 703.721.2155

Home

About Us

Calendar

Library

Parents

Staff Directory

Supply Lists

Bell Schedule

K - 6

Mon: 8:50am - 1:00pm

Tues - Fri: 8:50am - 3:25pm

Preschool / Headstart

Mon: 8:50am - 11:00am

Tues - Fri: 8:50am - 3:25pm

Office Hours

Mon - Fri: 8:00am - 4:30pm

Mission and Vision

Mission

At Mount Eagle Elementary School, we believe that all kids can learn. We have high standards of learning that all students are expected to achieve. Our mission is accomplished in a safe, inclusive environment in which learning is paramount and cultural diversity is valued. Students, staff, and community support enable students to master challenging academic materials. Our shared educational purpose including common knowledge, common language, and common expectations are the keys to our academic success.

Mount Eagle Guiding Questions

Here at Mount Eagle each teacher asks the following five guiding questions as they collaboratively plan all instruction:

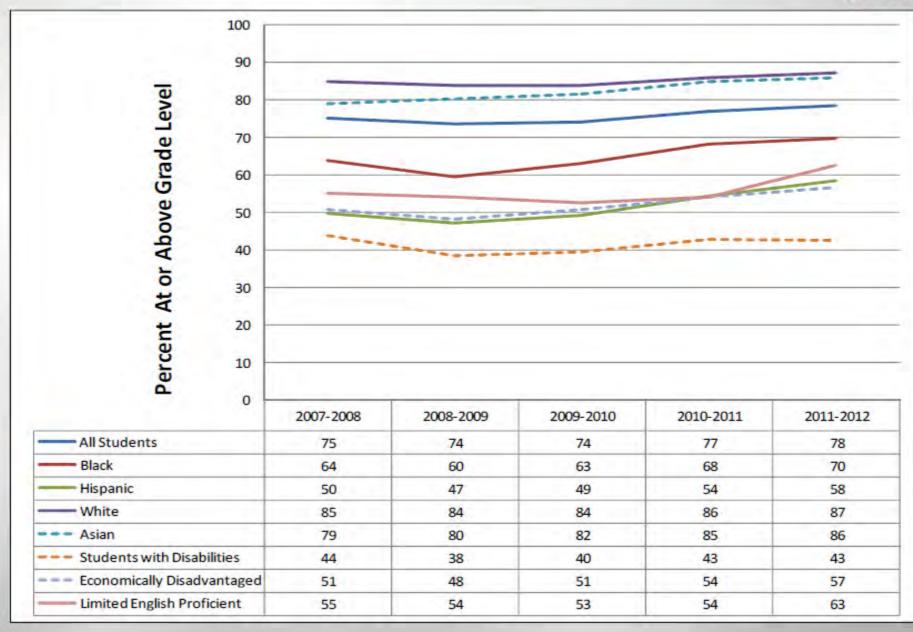
- 1. What is it we want all students to learn?
- 2. How will we know when they know it?
- 3. What will we do when they don't learn?
- 4. What will we do when they already know it?
- How do we engage in relevant pedagogy and professional development to ensure that we are collectively answering these questions?

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FCPS District-Wide (Rdg)

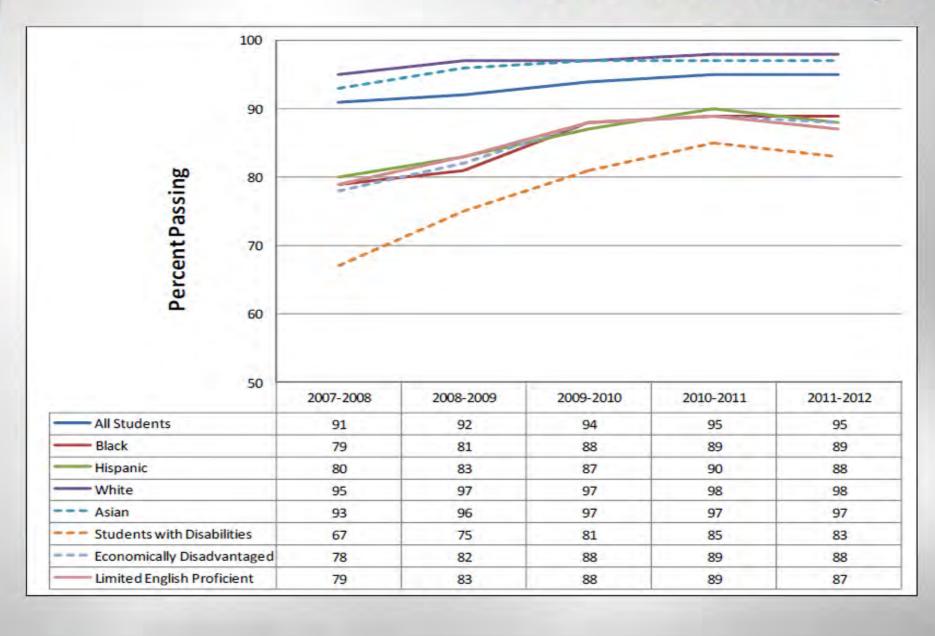
Percent of Grade 2 Students Scoring At or Above Grade Level on the Developmental Reading Assessment 2nd edition (DRA2)





FCPS District-Wide (Rdg)

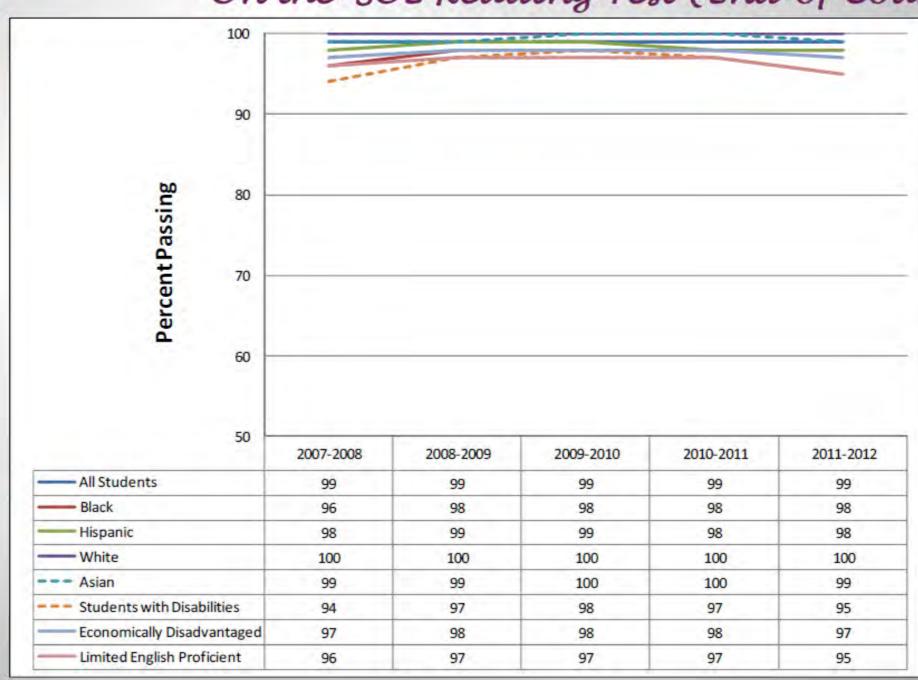
Percent of Grade 8 Students Scoring
Pass Proficient & Pass Advanced
On the SOL Reading Test





FCPS District-Wide (Rdg)

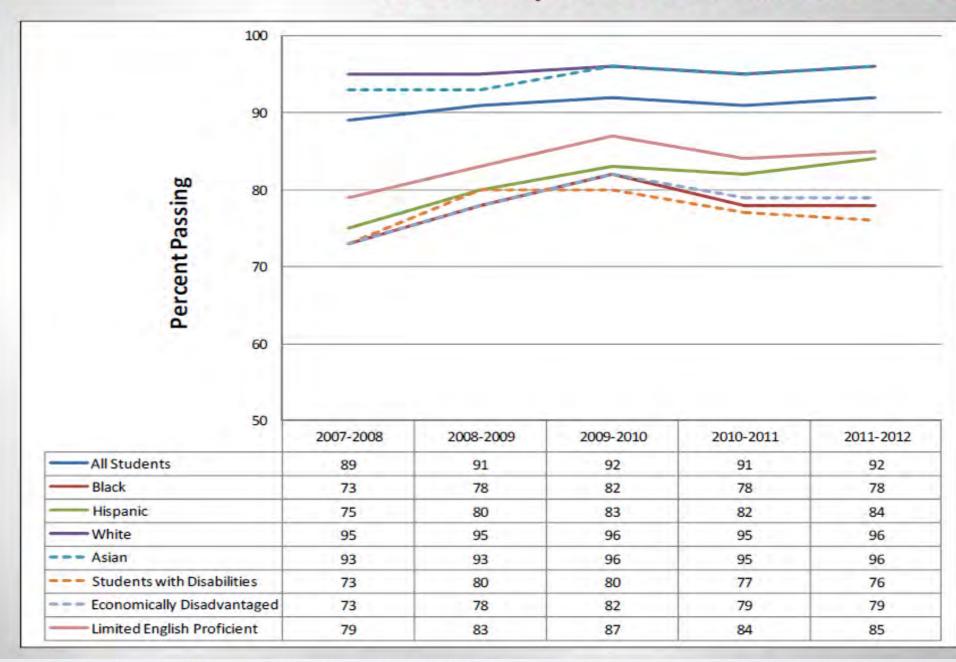
Percent of Grade 12 Students Scoring
Pass Proficient & Pass Advanced
On the SOL Reading Test (End-of-Course)





FCPS District-Wide (Math)

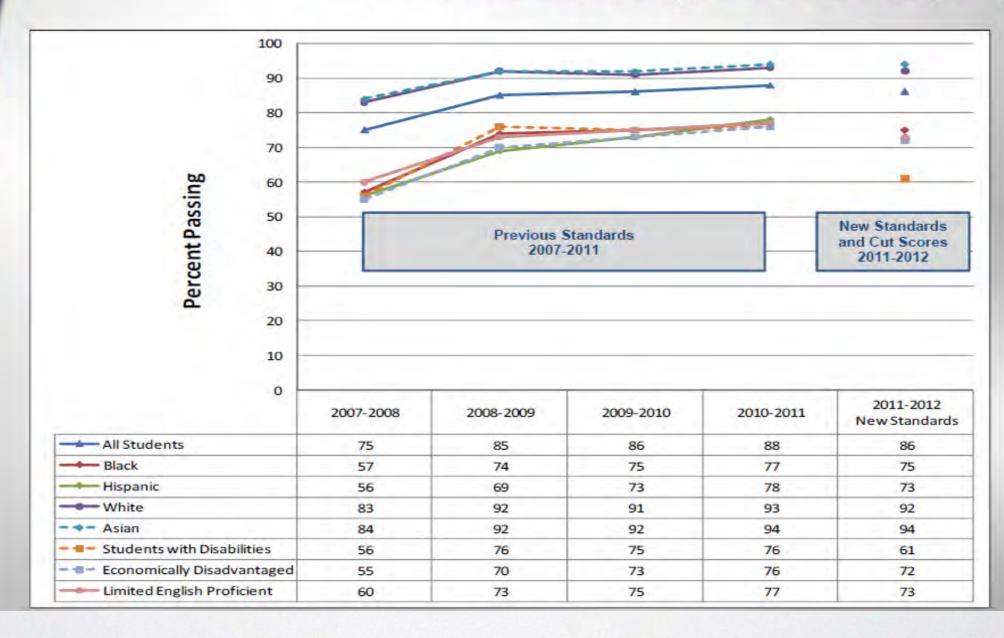
Percent of Grade 3 Students Scoring
Pass Proficient & Pass Advanced





FCPS District-Wide (Math)

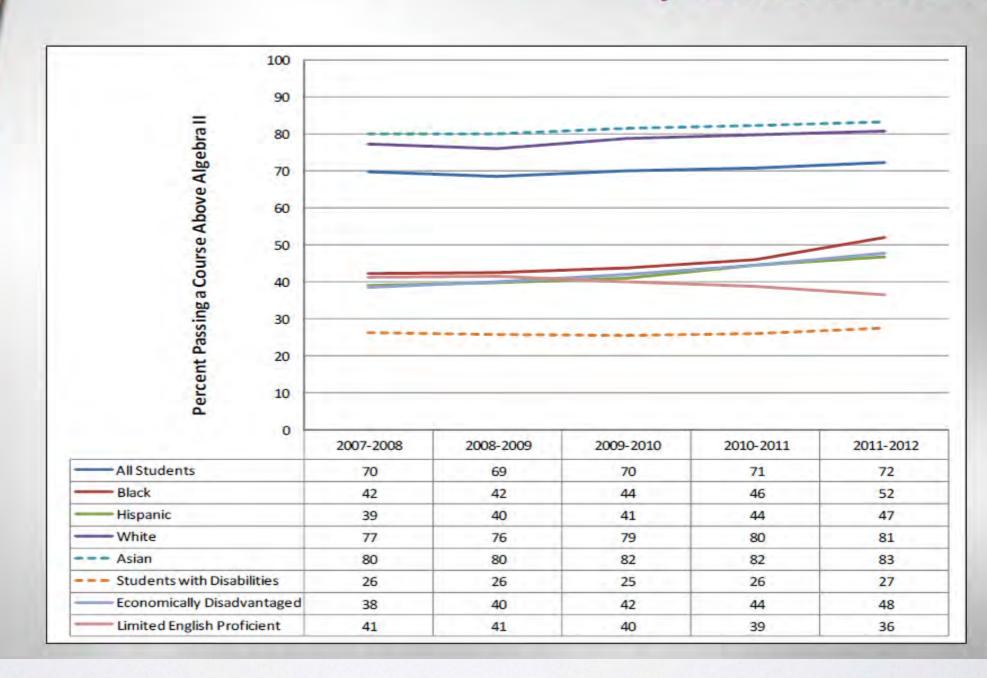
Percent of Students Taking the Grade 6 Mathematics SOL Test Pass Proficient or Pass Advanced (includes students in grades 4 through 6)





FCPS District-Wide (Math)

Percent of Grade 12 Students
Passing Course above Algebra 2
by End of Grade 12







How Do Principals Really Improve Schools?

Each person read the article and consider the following questions.

- I. What has been the faulty logic for improving schools?
- 2. Are there any parallels in the article to DPAS II regarding observations? If so, explain.
- 3. What is the Case for the PLC Process?
- 4. What is the most vital support a principals can give collaborative teams? How else could principals support collaborative teams?
- 5. What is the difference between an "instructional leader" and a "learning leader"?





How Do Principals Really Improve Schools?

Each person read the article and consider the following questions.

- What has been the faulty logic for improving schools?
 (12:00 Clock Buddy)
- 2. Are there any parallels in the article to DPAS II regarding observations? If so, explain. (3:00 Clock Buddy)
- 3. What is the Case for the PLC Process? (6:00 Clock Buddy)
- 4. What is the most vital support a principals can give collaborative teams? How else could principals support collaborative teams? (9:00 Clock Buddy)
- 5. What is the difference between an 'instructional leader' and a 'learning leader'? (With your team)



http://www.fcps.edu/pla/opp/plc/





Turn & Talk

What were a couple of key elements they discussed in the video?





PLC Overview Common Core





"The best way you can support and motivate teachers is to create the conditions where they can be effective day after day, together."

- Andrew Hargreaves and Michael Fullan in "The Power of Professional Capital" in *Journal of Staff Development*, June 2013 (Vol. 34, #3, p.37), www.learningforward.org





Professional Learning Communities

"The PLC process is specifically intended to <u>create the conditions</u> that help educators become <u>more skillful in teaching</u> because <u>great teaching and high levels of learning go hand in hand." (DuFours & Marzano, 2011)</u>



Professional Learning Communities

The most frequently mentioned essential elements of 21st century professional development include professional learning communities (PLCs) and collaborative work among educators. PLCs provide teachers with opportunities for collaboration, which is a facet of professional development that has been highlighted by many different approaches to teacher learning.

In fact, <u>research demonstrates that the development of a strong professional community among educators is a key ingredient in improving schools</u>, as PLCs empower the faculty and administration to work collectively to provide quality instruction and improve student learning. Examined research and case studies suggest that <u>well-developed PLCs</u> have positive impacts on both teaching practice and student achievement.

<u>Effective PLCs share six core principles</u>: shared values and goals; collective responsibility; authentic assessment; self-directed reflection; stable settings; and strong leadership support. The <u>focus of a PLC should be</u> developing teachers' 'Knowledge of Practice' around the issue of student learning.

(Hanover Research, 2012)



Why Professional Learning Communities?

PLC process is one of the avenues that allows schools to develop the capacity of each teacher and helps ensure every Red Clay student is taught by a highly effective educator.









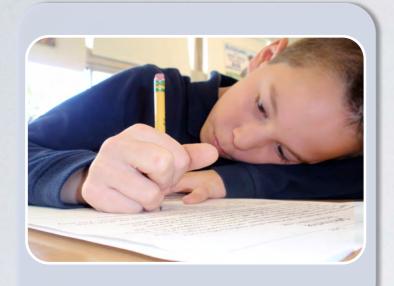
Focus on Learning

Focus on Collaboration

Focus or Results

PLC Focus





Learning as Our Fundamental Purpose

We, in the Red Clay Consolidated School District, acknowledge that the fundamental purpose of our schools is to help all students achieve high levels of learning, and therefore, we are willing to examine our practices in light of their impact on learning. We will develop and employ highly effective Professional Learning Communities to ensure the highest quality of instruction is afforded to every student. In addition, students will receive timely, research-based instructional strategies. Instruction will be monitored and adjusted, as needed, using a regular cycle of data analysis by each PLC team.

Building a Collaborative Culture Through High Performing Teams

We are committed to working together to achieve our collective purpose of learning for all students. We will cultivate a collaborative culture through the development of high performing teams.

RCCSD PLC Big 3

Focus on Results

We assess our effectiveness on the basis of results rather than intentions. Individuals, teams, and schools seek relevant data and information and use that information to promote continuous improvement.

Adapted from Fairfax County Public Schools





Four Essential (Corollary) Questions for PLCs (+1):

- I. What is it we want student to know? What knowledge, skills, and dispositions must all student acquire as a result of this grade level, this course, and this unit we are about to teach? What systems have we put in place to ensure we are providing every student with access to a guaranteed and viable curriculum regardless of the teacher to whom that student might be assigned?
- 2. How will we know if our students are learning? How can we check for understanding on an ongoing basis in our individual classrooms? How will we gather evidence of each student's proficiency as a team? What criteria will we establish to assess the quality of student work? How can we be certain we can apply the criteria consistently?
- 3. How will we respond when students do not learn? What steps can we put in place to provide students who struggle with additional time and support for learning in a way that is timely, directive, and systematic rather than invitational and random? How can we provide students with multiple opportunities to demonstrate learning?
- 4. How will we enrich and extend the learning for students who are proficient? How can we differentiate instruction among us so that the needs of all students are being met without relying on rigid tracking?
- 5. How will we engage in relevant pedagogy and professional development to ensure that we are collectively answering these questions? Job-embedded PD, research-based strategies, develop shared knowledge before making decisions, make decisions based on research and evidence not opinion.





Additional Questions to Consider with CCSS:

Based on our assessment data, what central ideas from the CCSS are students struggling to learn well? What will evidence of student learning look like for this standard? What student work will we collect and what performance task will we use to measure progress?

How will we teach this well so that all students learn? What instructional shifts will this require? What do we have to learn or study before we are prepared to teach? What obstacles do we expect in student thinking? How will we advance students forward on the learning pathway?

Focus on Learning

What does the evidence from performance tasks suggest about student strengths and continuing needs? How did our instructional plan contribute to this and what teaching needs to be revised to address continuing needs?





Focus on Collaboration

Focus on Collaboration

- I. Educators are organized into meaningful collaborative teams in which members work <u>interdependently</u> to achieve common goals for which they are mutually accountable
- 2. Regular time for collaboration is embedded into the routine practices of the school
- 3. Educators are clear on the purpose and priorities of their collaboration. They stay focused on the right work.
- 4. School and district leaders demonstrate "reciprocal accountability" (Elmore, 2003, p.93). They provide teachers and principals with the resources, training, and ongoing support to help them succeed in implementing the PLC process.

DuFour, R., & Marzano, R. (2011). Leaders of learning: How district, school, and classroom leaders improve student achievement.

TEAM TALK:

Read the above characteristics, determine strengths and weaknesses in your school using the characteristics.





Focus on Results

Focus on Results

Create a results orientation to know if students are learning and to respond appropriately to their needs.

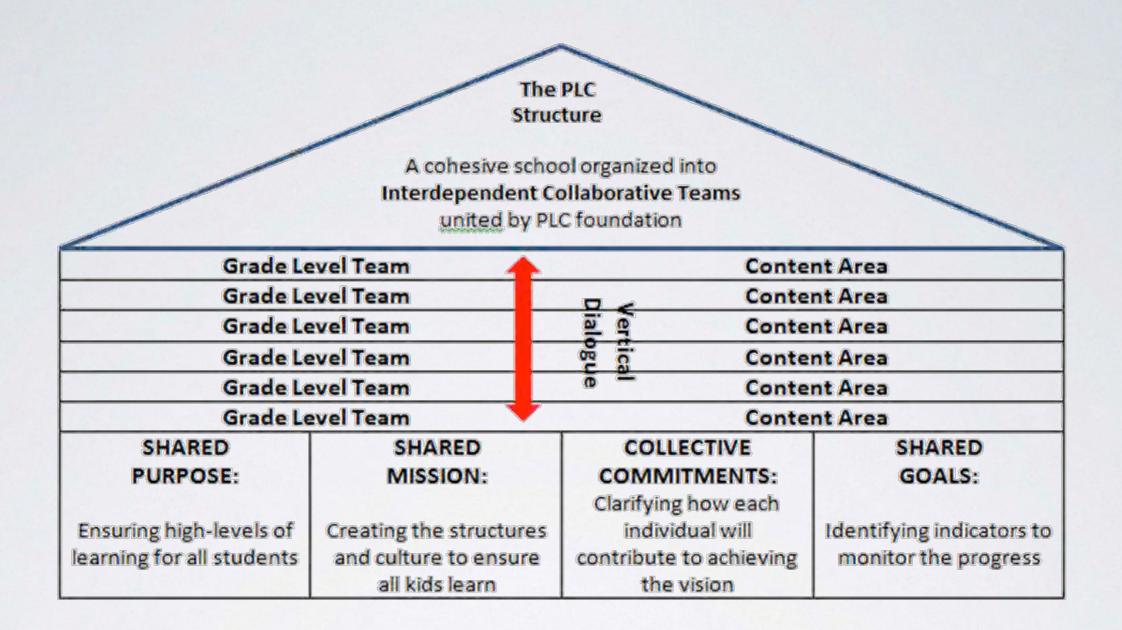
- I. Every member works collaboratively with others to achieve SMART goals.
- 2. Every member works collaboratively with others to gather and analyze evidence of student learning on a regular basis to inform and improve his or her professional practice as well as the collective practice of the collaborative team.
- 3. Evidence of student learning is used on a regular basis to identify the specific needs of individual students. The school creates processes to use assessment results to respond to students by name and by need.
- 4. Educators throughout the school assess the effectiveness of every policy, program, procedure, and practice on the basis of its impact on student learning.

DuFour, R., & Marzano, R. (2011). Leaders of learning: How district, school, and classroom leaders improve student achievement.

TEAM TALK:

Read the above characteristics, determine strengths and weaknesses in your school using the characteristics.







One Important Step in the PLC Process







Build Shared Knowledge

A Cardinal Rule: Professional learning communities always attempt to answer critical questions by first BUILDING SHARED KNOWLEDGE – engaging in collective inquiry – LEARNING together.

PLC Steps

If people make decisions based on collective study of the same pool of information, they increase the likelihood that they will arrive at the same conclusion.

(DuFour & DuFour, 2012, personal communication)





Consensus

You have arrived at consensus when all points of view have been heard, and the will of the group is evident — even to those who oppose it. It is not majority rules nor is it compromise. It is based on the will of the group.

PLC Steps





Consensus

In Attempting to Build Consensus

Did we build shared knowledge regarding best practice?

Did we honestly assess our current reality?

Did we ensure all points of view were heard?

Was the will of the group evident even to those who opposed it?

IF THE ANSWER TO EACH OF THESE QUESTIONS IS "YES", GO FOR IT!

Common Mistakes in Building Consensus

We try to go it alone, rather than building a guiding coalition
We use a forum that is ill-suited to the dialogue that is typically necessary for consensus

We use a process that allows cynics and skeptics to dominate

We pool opinions rather than build shared knowledge

We feel we need consensus on each, specific detail of implementation

We set an unrealistic standard for consensus and invest too much energy in resisters





Consensus

Fist to Five

5 – I'll champion

4 – Strongly Agree

3 – Agree

2 – Reservations

I – Oppose

Fist - Veto

If someone's vote is below a 3, give them an opportunity to speak and share their thoughts (not mandatory). Vote again. If you don't have consensus, continue to build shared knowledge. Note: Not all team members have to be 3 or above to have consensus; however, the team members below 3 will need to follow the direction of the team.





Seven Keys to Effective Teams

- I. Embed collaboration in routine practices of the school with a FOCUS ON LEARNING.
- 2. Schedule time for collaboration into the school day and school calendar.
- 3. Focus teams on critical questions.
- 4. Make products of collaboration explicit.
- 5. Establish team norms to guide collaboration.

Discuss 6 & 7 later in presentation.





Significance of Team Norms

When all is said and done, the norms of a group help determine whether it functions as a high-performing team or becomes simply a loose collection of people working together.

(Coleman, Working With Emotional Intelligence, 1998)

Explicit team norms help to increase the emotional intelligence of the group by cultivating trust, a sense of group identity, and belief in group efficacy.

(Druskat & Wolf, 2001)

Inattention to establishing specific team norms is one of the major reasons teams fail.

(Blanchard, 2007)





The Importance of Norms

One thing is clear: Having clear norms gives teams a huge advantage. A key to effective teams is involving all members in establishing norms and then holding everyone accountable to what they have agreed upon.

(Lencioni, Overcoming the Five Dysfunctions of a Team, 2005)





Guiding Questions for Team Norms

Are we clear on the commitments we have made to each other regarding how we will work together as a team?

Have we stated our commitments as explicit behaviors?

Have we discussed how to address the issue if we feel someone is not honoring our norms?





Criteria for Team Norms

The norms have clarified our expectations of one another.

All members of the team participated in creating the norms. All voices are heard.

The norms are stated as commitments to act in certain ways.

All members have committed to honoring the norms.





Tips for Team Norms

Each team establishes its own norms.

Norms are stated as commitments to act or behave in certain ways.

Norms are reviewed at the beginning and end of each meeting, until they are internalized.

One norm requires a team to assess its effectiveness every six months. This assessment should include a review of adherence to norms and the need to identify new norms.

Less is more. A few key norms are better than a laundry list.

Establish a process for addressing violations or norms.

TEAM TALK:

How do your teams currently address norm violations?





Group Norms (example)

In order to make our team meetings positive and productive experiences for all members, we make the following collective commitments to each other:

Begin and end our meetings on time and stay fully engaged during each meeting.

Maintain a positive attitude at team meetings – no complaining unless we offer a better alternative.

Listen respectfully to each other.

Contribute equally to the workload.

Make decisions on the basis of consensus.

Encourage one another to honor our commitments and candidly discuss our concerns when we feel a member is not living up to those commitments.

Fully support each other's efforts to improve student learning.





Group Roles

Discussion Leader. The discussion leader works to keep the group on track. He or she is charged with ensuring full participation from all team members, and helps to moderate individuals who may try to dominate the group discussion. Typical comments from the discussion leader may include the following:

"Let's focus on the problem."

"Should we move on the next question?"

"John, what do you think about this issue?"

Recorder/Record Keeper. The recorder keeps track of unresolved issues, records group strategies, maintains archives of all work sheets and electronic files, and convenes the group outside of class as necessary. You'll frequently hear the recorder say things like this:

"Did we get all of the learning issues down?"

"Is this the diagram we want to use?"

"I have a copy of our files. I also posted them to our File Exchange section in Blackboard. That way, everyone in the group will have access to the files we created today."





Group Roles

Reporter. The reporter assembles the draft of the group's solution for the project, solicits feedback from all group members, incorporates agreed-upon changes, and submits the project. The reporter is often heard uttering these phrases:

"Is everyone in agreement with this document?"

"Everyone needs to review this draft and get back to me with comments before Wednesday."

Accuracy Coach. The accuracy coach probes for group understanding and makes sure that all team members are familiar with all aspects of the project. He or she locates valid, legitimate resources, and brings them to class if necessary. The accuracy coach may also review the entire project for accuracy and completeness, although all team members typically have some responsibility for that activity. You'll probably hear the accuracy coach say things like this:

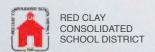
"Where did you find that information?"

"Are we all clear about the underlying logic behind this formula?"

"Does the text have information we might be able to use as we prepare our response to this problem?"

"Is this calculation correct?"

"Did we investigate all of the learning issues on our list?"





Group Roles

Timekeeper. The timekeeper makes sure the group stays on schedule – for the current group meeting and for the project as a whole. You'll hear the timekeeper say things like this:

"We only have ten minutes left in this class period. Are we ready to write our meeting summary for today?"

"The project is due in four days. We should have our final draft ready by noon tomorrow. That way, everyone can review it and we'll have time to incorporate changes before we turn it in."

Skeptic. The **skeptic** challenges group consensus, and poses alternative solutions or different ways to think about the problem. The skeptic may make these kinds of comments:

"I'm not sure we're on the right track."

"Should we consider other ideas?"

"Are we sure this is the only way to look at this issue?"

"What if the underlying conditions change? Will our solution still work, or should we look at ways to make our solution more flexible?"





Group Roles

Reflector/Summarizer . Reflection is a very important part of the PBL process. When you take the time to reflect on what you've done, you tend to come up with ways to improve how your group operates from class to class and from project to project. When group operations improve, the quality of the final project submissions tends to improve as well. The reflector/summarizer spearheads the reflection process. He or she summarizes the progress of the group at various stages of the project. This helps ensure that all team members are on the "same page," and provides a vehicle through which team members can make recommendations for improvements. The reflector/summarizer also works with the accuracy coach to check for group understanding. The reflector/summarizer tends to make comments like this:

"Here's where I think we are right now. Joe, what do you think?"

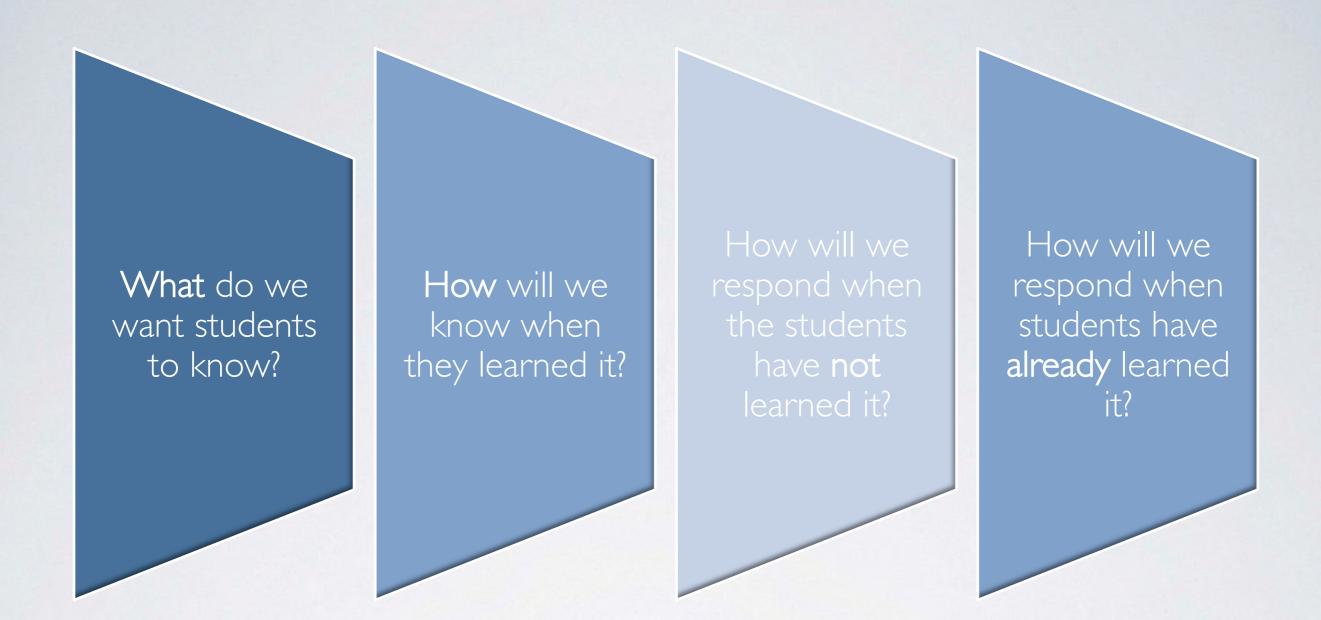
"Maria, you mentioned that we need to come up with a better review process for our final draft than the process we followed on the last project. We should discuss this as a team before we get too far along in this next project."

"Wow – I can't believe this class period is almost over! Let's talk about what we accomplished today."

"We're at the mid-point of our project. Here's what we've finished so far. Sue, does this agree with your records of our progress to date?"

† Adapted from Allen, D. A., Duch, B.J., and Groh, S. E. (2001). Strategies for using groups. In B.J. Duch, S.E. Groh, & D.E. Allen (Eds.), *The Power of Problem-Based Learning* (pp. 59-68). Sterling, VA: Stylus Publishing and Watson, George H. Silicon, Circuits, and the Digital Revolution (SCEN 103). II-Feb-2000. Department of Physics and Astronomy, University of Delaware. Retrieved 31-May-2005. http://www.physics.udel.edu/~watson/scen103/colloq2000/question1.html.





Essential/Corollary Questions





First Essential (Corollary) Question for PLCs:

- I. What is it we want students to know? What knowledge, skills, and dispositions must all student acquire as a result of this grade level, this course, and this unit we are about to teach? What systems have we put in place to ensure we are providing every student with access to a guaranteed and viable curriculum regardless of the teacher to whom that student might be assigned?
- a. Identify essential standards in CCSS which teams will work collaboratively to implement
 - b. Identify the nature and breadth of essential standards
- c. Articulate levels of knowledge and learning progressions for essential standards
 - d. Develop learning objectives based on essential standards





Criteria for Identifying Essential Common Outcomes

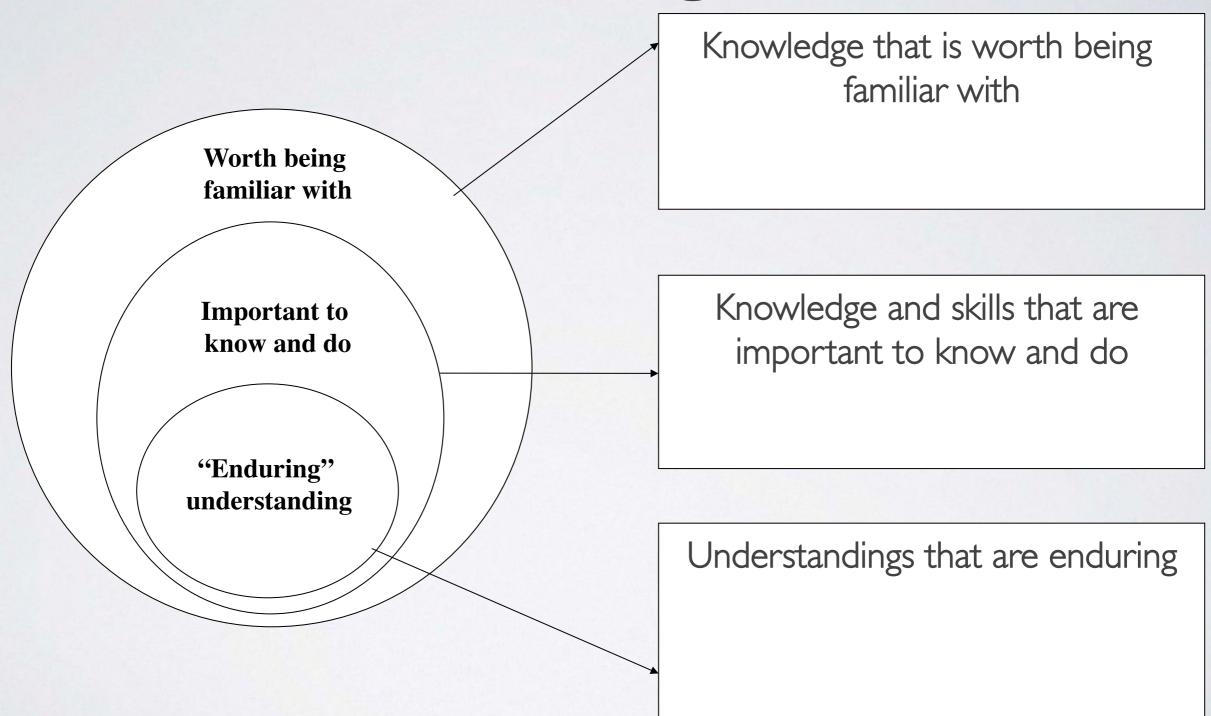
To separate the essential from the peripheral, apply these three criteria to each standard:

- I. Endurance Are students expected to retain the skills or knowledge long after the test is completed?
- 2. Leverage Is the skill or knowledge applicable to many academic disciplines?
- 3. Readiness for the next level of learning: Is this skill or knowledge preparing the student for success in the next grade or course?

(Reeves & Ainsworth, Power Standards: Identifying the Standards That Matter Most, 2003)



UbD: Establishing Priorities





Advantages of Team Discussion of Essential Learning

Greater clarity regarding the interpretation of standards

Greater consistency regarding the importance of different standards

Greater consistency in the amount of time devoted to different standards (common pacing)

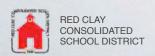
Common outcomes and common pacing are essential prerequisites for a team to create common assessments and team interventions.

Greater ownership of and commitment to standards

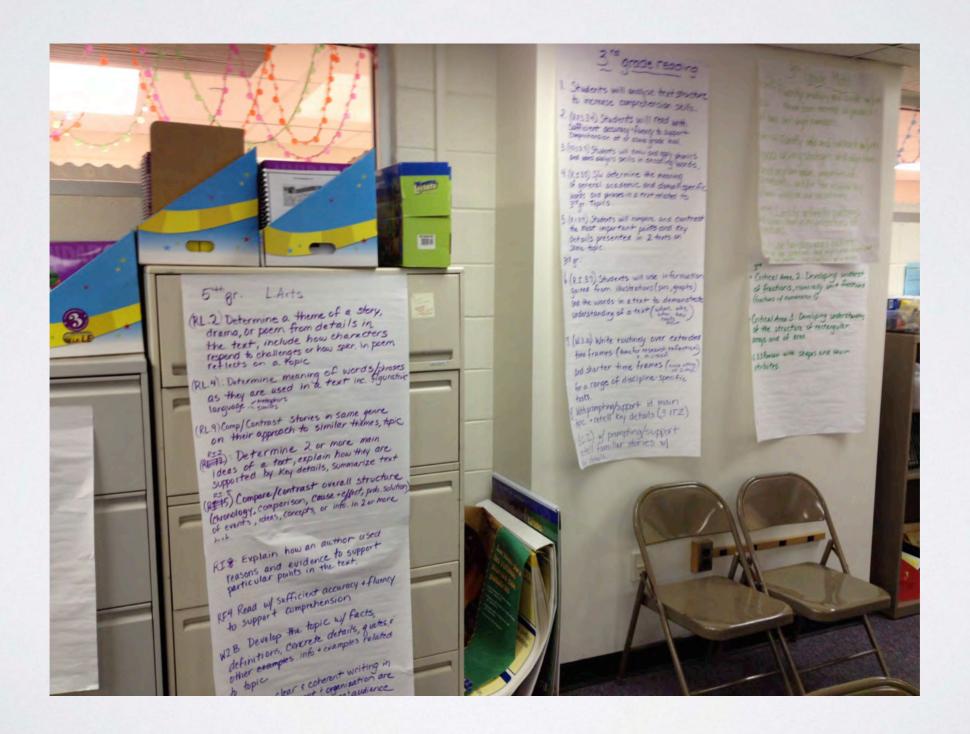


Essential Outcomes





Essential Outcomes





Guaranteed and Viable Curriculum

"A guaranteed and viable curriculum is strongly related to student achievement at the school level"

Marzano, R. (2003). What works in schools: Translating research into action. Alexandria, VA: ASCD.



Guaranteed and Viable Curriculum

- Intended Curriculum
- Implemented Curriculum
- Attained Curriculum
- Discrepancy between the intended curriculum and the implemented curriculum is where Opportunity to Learn (OTL) makes a prominent factor in student achievement.

Marzano, R. (2003). What works in schools: Translating research into action. Alexandria, VA: ASCD.



What do we want students to know?

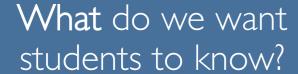
Guaranteed and Viable Curriculum

"The only way the curriculum in a school can truly be guaranteed is if the <u>teachers</u> themselves, those who are called upon to deliver the curriculum, have worked collaboratively to do the following:

- Study the intended curriculum
- Agree on priorities within the curriculum
- Clarify how the curriculum translates into student knowledge and skills
- Establish general pacing guidelines for delivering the curriculum
- Commit to one another that they will, in fact, teach the agreed-upon curriculum

DuFour, R., & Marzano, R. (2011). Leaders of learning: How district, school, and classroom leaders improve student achievement.





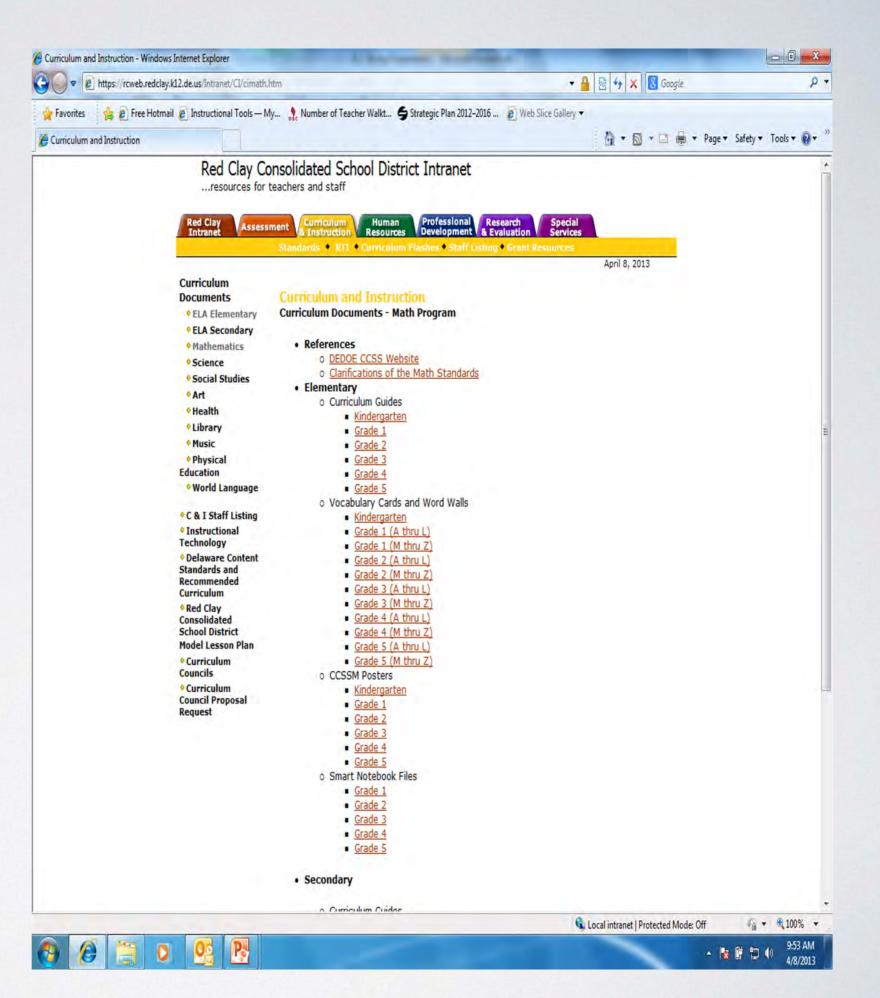
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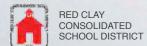
"One of the main differences between effective and ineffective teachers is that effective teachers know the learning intentions and success criteria of their lessons' (Hattie, 2009), and thus are in a position to continuously monitor the progress of their students toward those intended outcomes"

DuFour, R., & Marzano, R. (2011). Leaders of learning: How district, school, and classroom leaders improve student achievement.











Fifth Grade Curriculum Map

Mathematics

Unit Five: "Investigating Fractions"

14 days: November - December

Common Core State Standards

CC.5.NF.2 – Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators, e.g., by using visual fraction models or equations to represent the problem. Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers. For example, recognize an incorrect result 2/5 + 1/2 = 3/7 by observing that 3/7 < 1/2.

Delaware Prioritized Standards

- DE.K-12.5 Standard 5 Problem Solving: Students will develop their Problem Solving ability by engaging in developmentally appropriate problem-solving opportunities in which there is a need to use various approaches to investigate and understand mathematical concepts; to formulate their own problems; to find solutions to problems from everyday situations; to develop and apply strategies to solve a wide variety of problems; and to integrate mathematical reasoning, communication and connections.
- DE.5.1.18 Operations: Add and subtract benchmark fractions and fractions with common denominators using physical models.
- DE.6.1.10 Operations: Add and subtract fractions with unlike denominators and use physical models to justify your answer

Additional Delaware Prioritized Curriculum (GLEs)

- Apply more than one operation to solve word problem. E
- Develop understanding of fractions as parts of unit whole, as part of a collection, as locations on number lines, and as division of whole numbers. E
- · Generate and connect equivalent forms of benchmark fractions, decimals and percent. E
- Measure and compare objects using standard measures to the nearest ½, ¼, or 1/8 unit. E
- . Model problem situations with objects and use representations such as graphs, tables or equations to draw conclusions. E
- Measure and compare objects using standard measures to the nearest 1/10. E
- Find the number of square units it takes to cover a geometric figure (area). E

Mathematical Practices:

- 1. Make sense of problems and persevere in solving them.
- 2. Model with mathematics.

Enduring Understandings:

- 1. Fractions represent parts of a whole.
- 2. Ratios use division to represent relationships between two quantities.

Essential Questions

- 1. How can fractional parts of a whole be represented or modeled?
- 2. How are comparisons used in proportional reasoning?

Students will know and be able to:

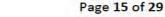
- 1. Represent fractions using pattern blocks and rectangles.
- 2. Find equivalent fractions.
- 3. Compare and order fractions.
- 4. Collect, organize, graph, and analyze data.
- 5. Draw and interpret best-fit lines.
- 6. Use ratios to solve problems.
- 7. Measure length in yards and feet.
- Add and subtract fractions using manipulatives, pictures, or symbols.
- 9. Develop fluency with multiplication and division facts.

Desired Result(s) Assessed:

- DPPs; L, R, T, U, V
- 2. Lesson 1, Homework Questions 5-6, SG
- 3. Lesson 3, Homework Questions 1-3, SG
- Lesson 5, Homework Questions 7 8, SG
- 5. Lesson 6, Explore Questions 17-21, SG
- 6. "Home Practice" Part 7, DAB
- 7. "Fraction Follow-Up" blackline master, URG



Highlight = Change in grade level







Learning Progression (KUD) Organizer

These Mathematics Learning Progressions Organizers are <u>not</u> replacements for teachers' individual unit KUDs. Rather, they are an unpacking and clarification of the <u>concepts</u> inherent in the Common Core State Standards. These are a resource from which teachers should select appropriate *Knowledge*, *Understandings*, and *Dos* to develop their own unit KUDs to guide planning for instruction.

Course: Grade 6 Math

Topic: Algebraic Reasoning - Quantitative Relationships

Which standards are in this learning progression?

6.EE.9

Connections to other Domains and/or Clusters:

6.RP.3a-b. 6.EE.3 - 8

By the end of this learning progression, students will be able to ...

UNDERSTAND:

Quantitative relationships between dependent and independent variables can be represented in multiple ways including algebraic (equation), graphical, verbal (scenario), and tabular.

KNOW: DO:

Quantities that change in relationship to one another can be represented using variables.

There is a relationship between independent and dependent variables.

Different representations of the relationship provide varied opportunities to analyze changes in quantities (e.g., as in linear relationships).

Various representations of quantitative relationships including: scenario (context) table, graph, and equation. Represent and analyze quantitative relationships between dependent and independent variables.

9. Use variables to represent two quantities in a real-world problem that change in relationship to one another; write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation. For example, in a problem involving motion at constant speed, list and graph ordered pairs of distances and times, and write the equation d = 65t to represent the relationship between distance and time. CC.6.EE.9

Use graphs to analyze the nature of changes in quantities in linear relationships.

This connects to:

6.RP.3a-b in which students utilize rates to solve problems.

6.EE.5-8 in which students are writing and solving equations and inequalities for contextual and mathematical situations.

Mathematically proficient students acquire precision in the use of mathematical language by engaging in discussion with others and by giving voice to their own reasoning. By the time they reach high school they have learned to examine claims, formulate definitions, and make explicit use of those definitions. The terms students should learn to use with increasing precision in this unit are: Equation, variable, quantity, independent variable, dependent variable, table, graph, equation, axes, x-axis, y-axis, scale, coordinate pairs, relationship

Standards for Mathematical Practice:

- Make sense of problems & persevere in solving them.
- Reason abstractly & quantitatively.
- 3. Construct viable arguments and critique the reasoning of others.
- Model with mathematics

- Use appropriate tools strategically.
- 6. Attend to precision.
- Look for and make use of structure.
- Look for and express regularity in repeated reasoning.



CCSS Assessment Examples (DE)



Teaching and Learning Branch Accountability Resources Workgroup

Number and Quantity: The Number System (NS)

Know that there are numbers that are not rational, and approximate them by rational numbers.

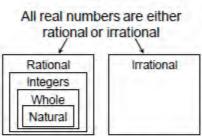
Standard

8.NS.1 – Know that numbers that are not rational are called irrational. Understand informally that every number has a decimal expansion; for rational numbers show that the decimal expansion repeats eventually, and convert a decimal expansion which repeats eventually into a rational number.

Resources: Students can use graphic organizers to show the relationship between the subsets of the real number system.

Example:

Real Numbers



- Any number that can be expressed as a fraction is a rational number. A rational number is of the form a and b are both integers and b is not 0. Students recognize that the decimal equivalent of a fraction will either terminate or repeat.
 Change 0.4 to a fraction.
 - Let x = 0.4444444...
 - Multiply both sides so that the repeating digits will be in front of the decimal. In this example, one digit repeats so both sides are multiplied by 10, giving 10x = 4.444444..... Subtract the original equation from the new equation.

$$10x = 4.4444444...$$

$$x = 0.444444...$$

$$x = \frac{4}{9}$$

Students can investigate repeating patterns that occur with denominators 9, 99, or 11.

$$\frac{4}{9}$$
 is equivalent to $0.\overline{4}$, $\frac{5}{9}$ is equivalent to $0.\overline{5}$, etc.



COMMON CORE ASSESSMENT COMPARISON FOR MATHEMATICS

Grade 6

June 2013

6.NS.1 – Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions, e.g., by using visual fraction models and equations to represent the problem. For example, create a story context for $(2/3) \div (3/4)$ and use a visual fraction model to show the quotient; use the relationship between multiplication and division to explain that $(2/3) \div (3/4) = 8/9$ because 3/4 of 8/9 is 2/3. (In general, $(a/b) \div (c/d) = ad/bc$.). How much chocolate will each person get if 3 people share 1/2 lb of chocolate equally? How many 3/4-cup servings are in 2/3 of a cup of yogurt? How wide is a rectangular strip of land with length 3/4 mi and area 1/2 square mi?

DCAS-Like

9A $6^{\frac{2}{3}} \div 2^{\frac{3}{3}} =$

A. $2\frac{2}{7}$

B. $17\frac{2}{7}$

C. $2\frac{6}{11}$

D. $\frac{7}{16}$

Next-Generation

9B

Alice, Raul, and Maria are baking cookies together. They need $\frac{3}{4}$ cup of flour and $\frac{1}{3}$ cup of butter to make a dozen cookies. They each brought the ingredients they had at home.

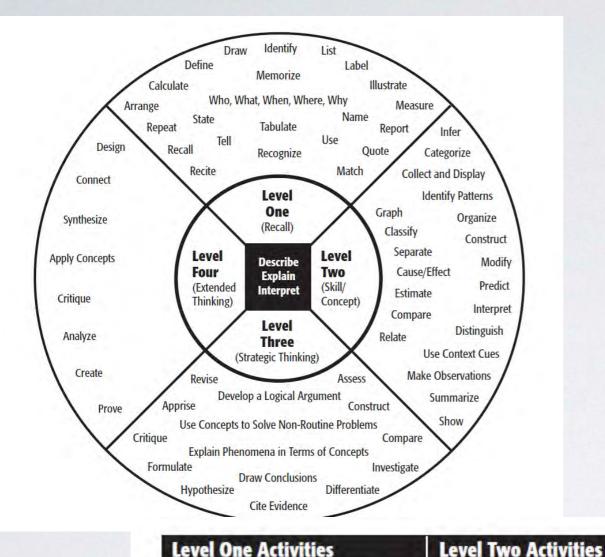
Alice brought 2 cups of flour and $\frac{1}{4}$ cup of butter, Raul brought 1 cup of flour and $\frac{1}{2}$ cup of butter, and Maria brought 1 $\frac{1}{4}$ cups of flour and $\frac{3}{4}$ cup of butter. If the students have plenty of the other ingredients they need (sugar, salt, baking soda, etc.), how many whole batches of a dozen cookies each can they make?

Cognitive Rigor Matrix

Hess' Cognitive Rigor Matrix & Curricular Examples: Applying Webb's Depth-of-Knowledge Levels to Bloom's Cognitive Process Dimensions - ELA

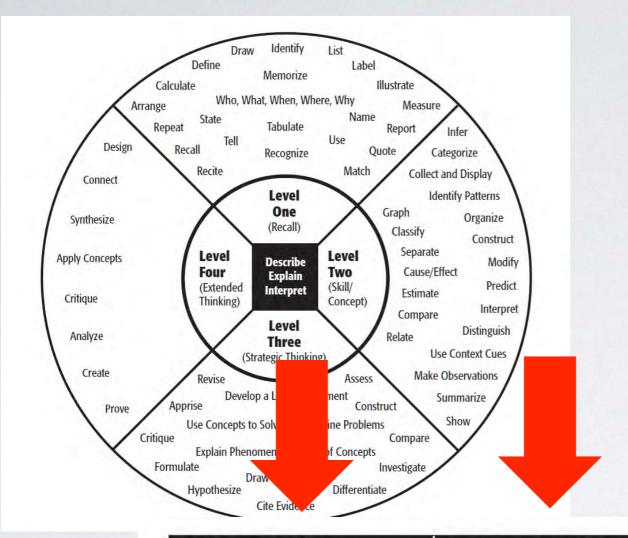
Revised Bloom's Taxonomy	Webb's DOK Level 1 Recall & Reproduction	Webb's DOK Level 2 Skills & Concepts	Webb's DOK Level 3 Strategic Thinking/ Reasoning	Webb's DOK Level 4 Extended Thinking
Remember Retrieve knowledge from long- term memory, recognize, recall, locate, identify	Recall, recognize, or locate basic facts, details, events, or ideas explicit in texts Read words orally in connected text with fluency & accuracy	Skills & Stillerps		Extended Hilliams
Understand Construct meaning, clarify, paraphrase, represent, translate, illustrate, give examples, classify, categorize, summarize, generalize, infer a logical conclusion), predict, compare/contrast, match like ideas, explain, construct models	Identify or describe literary elements (characters, setting, sequence, etc.) Select appropriate words when intended meaning/definition is clearly evident Describe/explain who, what, where, when, or how Define/describe facts, details, terms, principles Write simple sentences	Specify, explain, show relationships; explain why, cause-effect Give non-examples/examples Summarize results, concepts, ideas Make basic inferences or logical predictions from data or texts Identify main ideas or accurate generalizations of texts Locate information to support explicit-implicit central ideas	 Explain, generalize, or connect ideas using supporting evidence (quote, example, text reference) Identify/ make inferences about explicit or implicit themes Describe how word choice, point of view, or bias may affect the readers' interpretation of a text Write multi-paragraph composition for specific purpose, focus, voice, tone, & audience 	 Explain how concepts or ideas specifically relate to other content domains or concepts Develop generalizations of the results obtained or strategies used and apply them to new problem situations
Apply Carry out or use a procedure in a given situation; carry out (apply to a familiar task), or use (apply) to an unfamiliar task	Use language structure (pre/suffix) or word relationships (synonym/antonym) to determine meaning of words Apply rules or resources to edit spelling, grammar, punctuation, conventions, word use Apply basic formats for documenting sources	Use context to identify the meaning of words/phrases Obtain and interpret information using text features Develop a text that may be limited to one paragraph Apply simple organizational structures (paragraph, sentence types) in writing	Apply a concept in a new context. Revise final draft for meaning or progression of ideas Apply internal consistency of text organization and structure to composing a full composition. Apply word choice, point of view, style to impact readers' /viewers' interpretation of a text.	Illustrate how multiple themes (historical, geographic, social) may be interrelated Select or devise an approach among many alternatives to research a novel problem
Analyze Break into constituent parts, determine how parts relate, differentiate between relevant- irrelevant, distinguish, focus, select, organize, outline, find coherence, deconstruct (e.g., for bias or point of view)	Identify whether specific information is contained in graphic representations (e.g., map, chart, table, graph, T-chart, diagram) or text features (e.g., headings, subheadings, captions) Decide which text structure is appropriate to audience and purpose	Categorize/compare literary elements, terms, facts/details, events ldentify use of literary devices Analyze format, organization, & internal text structure (signal words, transitions, semantic cues) of different texts Distinguish: relevant-irrelevant information; fact/opinion ldentify characteristic text features, distinguish between texts, genres	Analyze information within data sets or texts Analyze interrelationships among concepts, issues, problems Analyze or interpret author's craft (literary devices, viewpoint, or potential bias) to create or critique a text Use reasoning, planning, and evidence to support inferences	Analyze multiple sources of evidence, or multiple works by the same author, or across genres, time periods, themes Analyze complex/abstract themes, perspectives, concepts Gather, analyze, and organize multiple information sources Analyze discourse styles
Evaluate Make judgments based on criteria, check, detect inconsistencies or fallacies, judge, critique			Cite evidence and develop a logical argument for conjectures Describe, compare, and contrast solution methods Verify reasonableness of results Justify or critique conclusions drawn	Evaluate relevancy, accuracy, & completeness of information from multiple sources Apply understanding in a novel way, provide argument or justification for the application
Create Reorganize elements into new patterns/structures, generate, hypothesize, design, plan, produce	Brainstorm ideas, concepts, problems, or perspectives related to a topic or concept	 Generate conjectures or hypotheses based on observations or prior knowledge and experience 	Synthesize information within one source or text Develop a complex model for a given situation Develop an alternative solution	Synthesize information across multiple sources or texts Articulate a new voice, alternate theme, new knowledge or perspective





Depth of Knowledge

Level Three Activities Level Four Activities Identify and summarize the major Support ideas with details and Conduct a project that requires Recall elements and details of story structure, such as sequence of events in a narrative. examples. specifying a problem, designing and conducting an experiment, analyzing events, character, plot and setting. Use context cues to identify the Use voice appropriate to the its data, and reporting results/ purpose and audience. meaning of unfamiliar words. Conduct basic mathematical solutions. calculations. Identify research questions and Solve routine multiple-step problems. Apply mathematical model to design investigations for a Label locations on a map. illuminate a problem or situation. Describe the cause/effect of a scientific problem. particular event. Represent in words or diagrams a Analyze and synthesize Develop a scientific model for a scientific concept or relationship. information from multiple sources. Identify patterns in events or complex situation. behavior. Describe and illustrate how common Perform routine procedures like Determine the author's purpose themes are found across texts from measuring length or using Formulate a routine problem given and describe how it affects the different cultures. punctuation marks correctly. data and conditions. interpretation of a reading Design a mathematical model to selection. Describe the features of a place or Organize, represent and interpret inform and solve a practical people. Apply a concept in other contexts. data. or abstract situation.



punctuation marks correctly.

people.

Describe the features of a place or

Depth of Knowledge

Level Three Activities

Apply a concept in other contexts.

Level One Activities Level Two Activities Identify and summarize the major Recall elements and details of story structure, such as sequence of events in a narrative. events, character, plot and setting. Use context cues to identify the meaning of unfamiliar words. Conduct basic mathematical calculations. Solve routine multiple-step problems. Label locations on a map. Describe the cause/effect of a particular event. Represent in words or diagrams a scientific concept or relationship. Identify patterns in events or behavior. Perform routine procedures like measuring length or using Formulate a routine problem given

data and conditions.

data.

Organize, represent and interpret

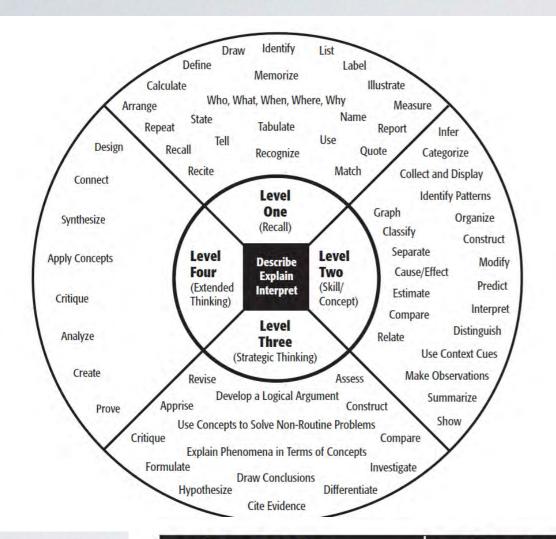
Support ideas with details and Conduct a project that requires examples. specifying a problem, designing and conducting an experiment, analyzing Use voice appropriate to the its data, and reporting results/ purpose and audience. solutions. Identify research questions and Apply mathematical model to design investigations for a illuminate a problem or situation. scientific problem. Analyze and synthesize Develop a scientific model for a information from multiple sources. complex situation. Describe and illustrate how common Determine the author's purpose themes are found across texts from and describe how it affects the different cultures. interpretation of a reading Design a mathematical model to selection.

Level Four Activities

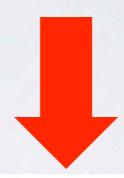
inform and solve a practical

or abstract situation.





Depth of Knowledge





Recall elements and details of story structure, such as sequence of events, character, plot and setting. Conduct basic mathematical calculations.

Label locations on a map.

Represent in words or diagrams a scientific concept or relationship.

Perform routine procedures like measuring length or using punctuation marks correctly.

Describe the features of a place or people.

Level Two Activities

Identify and summarize the major events in a narrative.

Use context cues to identify the meaning of unfamiliar words.

Solve routine multiple-step problems.

Describe the cause/effect of a particular event.

Identify patterns in events or behavior.

Formulate a routine problem given data and conditions.

Organize, represent and interpret data.

Level Three Activities

Support ideas with details and examples.

Use voice appropriate to the purpose and audience.

Identify research questions and design investigations for a scientific problem.

Develop a scientific model for a complex situation.

Determine the author's purpose and describe how it affects the interpretation of a reading selection.

Apply a concept in other contexts.

Level Four Activities

Conduct a project that requires specifying a problem, designing and conducting an experiment, analyzing its data, and reporting results/ solutions.

Apply mathematical model to illuminate a problem or situation.

Analyze and synthesize information from multiple sources.

Describe and illustrate how common themes are found across texts from different cultures.

Design a mathematical model to inform and solve a practical or abstract situation.





Unpack the Standard

Prerequisite Knowledge

Review prior standards

Understanding

As a result of this unit of instruction, students will understand

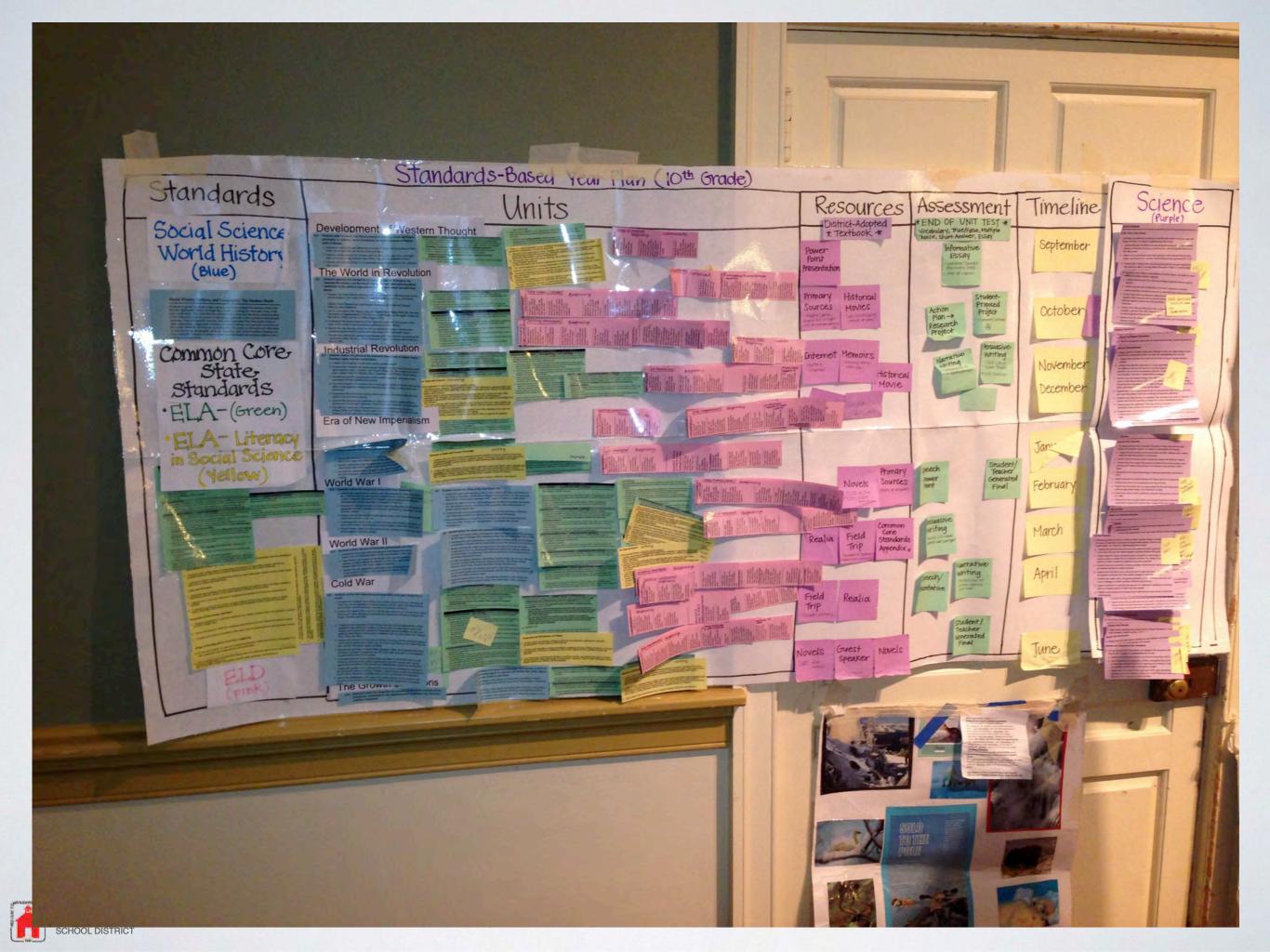
Knowledge

For standard _____, students will know

Skills

For standard _____, students will be able to do







Focus on Learning How to Plan a Rigorous Unit

http://www.youtube.com/watch?v=MTAjM9Gtrlk





PLC Steps

Seven Keys to Effective Teams

- I. Embed collaboration in routine practices of the school with a FOCUS ON LEARNING.
- 2. Schedule time for collaboration into the school day and school calendar.
- 3. Focus teams on critical questions.
- 4. Make products of collaboration explicit.
- 5. Establish team norms to guide collaboration.
- 6. Pursue specific and measurable team performance goals.
- 7. Provide teams with frequent access to relevant information.





SMART Goals

Strategic and specific

Measurable

Attainable

Results oriented (student results)

Time bound

(Conzemius & O'Neill, 2005)





Are These SMART Team Goals?

Turn and Talk

Strategically aligned with the schoolwide goal of improving student achievement, by the end of this school year we will:

- 1. Develop and administer at least six common assessments.
- 2. Implement the Common Core State Standards in 100% of our classrooms
- 3. Increase the percentage of students achieving and exceeding the target score (80% or higher) on each strand of our end-of-the-year assessment, from 81% last year to at least 90% this year.





SMART Goals

The Importance of Short-Term Smart Goals

People can become so caught up in big dreams that they don't manage the current reality. Short-term gains are needed to establish credibility for a change initiative over the long haul. Major change takes time. Zealots will stay the course no matter what. Most of us want to see some convincing evidence that all the effort is paying off. Nonbelievers have even higher standards of proof. We want clear data indicating changes are working. (Kotter, 1996, pp. 118-119)





SMART Goals

Goals inform individuals as to what type or level of performance is to be attained so that they can direct and evaluate their actions and efforts accordingly. Feedback allows them to set reasonable goals and to track their performance in relation to their goals so that adjustments in effort, direction, and even strategy can be made as needed.

(Locke & Latham, 1990, p.23)





Focus on Learning

SMART Goal Example

Below is an example of a SMART Goal to provide you with some assistance while you develop your goal for Component 5 ~ Goal Setting.

SMART Goal:

90% of the students in my ELA class will be able to respond to Level IV and above (analysis, synthesis, & evaluation) questions (Bloom's Taxonomy) with 95% accuracy by the end of the 2010 – 2011 school year.

What is your baseline data and how will you monitor students' progress:

Level of Performance	Milestones/Benchmarks	Date	
78% of students with 95% accuracy	Unit I Theme Test Question 4 QAR questions during small group reading	10/4/10	
	Unit 2 Theme Test Question 6 Teacher directed questions during small group reading (must keep a record)	11/7/10 (tentatively)	

This table would continue with specific benchmark items throughout the school year. NOTE: Who specifically are the students that are not able to meet the target?



GOAL DREAM. -dave ramsey





SMART Goal Example

What activities will be undertaken to help you reach your goal?

	Activities: What specific activities will be undertaken to implement the improvement strategy?	Resources: To implement the activity well, what resources are needed?	Schedule: On what schedule will the activity be implemented?
	I. Read the book Open-ended Questioning: A Handbook for Educators by Robin Lee Harris Freedman	Book - Open-ended Questioning: A Handbook for Educators by Robin Lee Harris Freedman	Complete book by November 1st
	2. All students will be instructed in whole group and small group reading with extra support for targeted students through pre-teaching and intervention readers.	SF leveled readers	daily
	3. All students will receive instruction in QAR strategies, RARE Response strategies, and Reciprocal Teaching strategies.	SF materials	daily
	4. Students will use a 2-point rubric for assessing comprehension (self-assessment)	2-point rubrics for each student's desk and poster for classroom	daily



Focus and Alignment







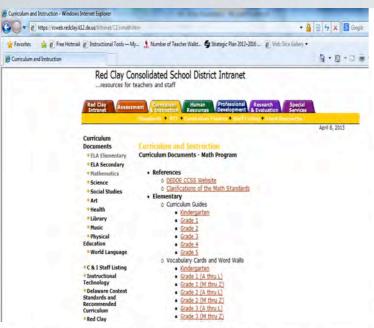
Focus on Learning

Second Essential (Corollary) Question for PLCs:

- 2. How will we know if our students are learning? How can we check for understanding on an ongoing basis in our individual classrooms? How will we gather evidence of each student's proficiency as a team? What criteria will we establish to assess the quality of student work? How can we be certain we can apply the criteria consistently?
 - a. Explore CCSS SBAC released items
 - b. Develop proficiency scales for each essential standard
- c. Develop common formative assessments using proficiency scales
- d. Employ concept of unidimensionality (one standard assessed) when designing and scoring common formative assessments. May use multidimensional (two or more standards) assessments; however, would have multiple for assessments

scores





Fifth Grade Curriculum Map

Unit Five: "Investigating Fractions"

14 days: November - December

Common Core State Standards

CC.5.NF.2 - Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators, e.g., by using visual fraction models or equations to represent the problem. Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers. For example recognize an incorrect result 2/5 + 1/2 = 3/7 by observing that

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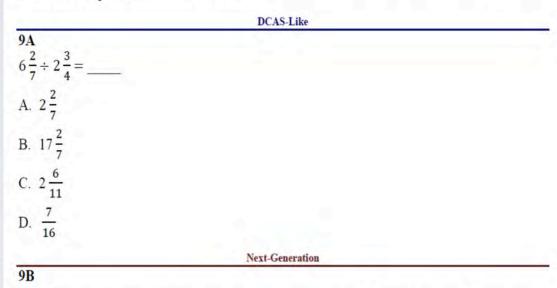
Additional Delaware Prioritized Curriculum (GLEs)

- Apply more than one operation to solve word problem. I
- Develop understanding of fractions as parts of unit whole, as part of a collection, as locations on number lines, and as division of whole numbers. E
- Generate and connect equivalent forms of benchmark fractions, decimals and percent. I
- Measure and compare objects using standard measures to the nearest ½, ¼, or 1/8 unit. E
- Model problem situations with objects and use representations such as graphs, tables or equations to draw conclusions.
- Measure and compare objects using standard measures to the nearest 1/10. E
- . Find the number of square units it takes to cover a geometric figure (area). E

Mathematical Practices:

1. Make sense of problems and persevere in solving them.

6.NS.1 – Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions, e.g., by using visual fraction models and equations to represent the problem. For example, create a story context for $(2/3) \div (3/4)$ and use a visual fraction model to show the quotient; use the relationship between multiplication and division to explain that $(2/3) \div (3/4) = 8/9$ because 3/4 of 8/9 is 2/3. (In general, $(a/b) \div (c/d) = ad/bc$.). How much chocolate will each person get if 3 people share 1/2 lb of chocolate equally? How many 3/4-cup servings are in 2/3 of a cup of yogurt? How wide is a rectangular strip of land with length 3/4 mi and area 1/2 square mi?



Alice, Raul, and Maria are baking cookies together. They need $\frac{3}{4}$ cup of flour and $\frac{1}{3}$ cup of butter to make a dozen cookies. They each brought the ingredients they had at home.

Alice brought 2 cups of flour and $\frac{1}{4}$ cup of butter, Raul brought 1 cup of flour and $\frac{1}{4}$ cup of butter, and Maria brought $1\frac{1}{4}$ cups of flour and $\frac{3}{4}$ cup of butter. If the students have plenty of the other ingredients they need (sugar, salt, baking soda, etc.), how many whole batches of a dozen cookies each can they make?

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Course: Grade 6 Math

Topic: Algebraic Reasoning - Quantitative Relationships

Which standards are in this learning progression?

Connections to other Domains and/or Clusters

6.RP.3a-b. 6.EE.3 - 8

By the end of this learning progression, students will be able to

UNDERSTAND:

Quantitative relationships between dependent and independent variables can be represented in multiple ways including

algebraic (equation), graphical, verbal (scenario), and tabular KNOW Quantities that change Represent and analyze quantitative relationships between dependent and relationship to one another can ndent variables. be represented using variables. Use variables to represent two quantities in a real-world problem that change in There is a relationship between relationship to one another, write an equation to express one quantity, thought of independent and dependent as the dependent variable, in terms of the other quantity, thought of as the variables. independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation Different representations of the For example, in a problem involving motion at constant speed, list and graph relationship provide varied ordered pairs of distances and times, and write the equation d = 65t to represent opportunities to analyze the relationship between distance and time, CC.6.EE.9 changes in quantities (e.g., as Use graphs to analyze the nature of changes in quantities in linear relationships in linear relationships). Various representations of

> Teaching and Learning Branch Accountability Resources Workgroup

Delaware Department of Education

Number and Quantity: The Number System (NS)

Know that there are numbers that are not rational, and approximate them by rational numbers.

Mathematics

Standard

8.NS.1 - Know that numbers that are not rational are called irrational. Understand informally that every number has a decimal expansion; for rational numbers show that the decimal expansion repeats eventually, and convert a decimal expansion which repeats eventually into a rational number.

Resources: Students can use graphic organizers to show the relationship between the subsets of the real number system.

Example:

Real Numbers

All real numbers are either rational or irrational Rational Integers Whole Natural

- Any number that can be expressed as a fraction is a rational number. A rational number is of the form , where a and b are both integers and b is not 0. Students recognize that the decimal equivalent of a fraction will either terminate or repeat
- Change 0.4 to a fraction.
- Let x = 0.4444444.
- Multiply both sides so that the repeating digits will be in front of the decimal. In this example, one digit repeats so both sides are multiplied by 10, giving 10x = 4.444444... Subtract the original equation from the new equation

10x = 4.4444444...

x = 0.444444

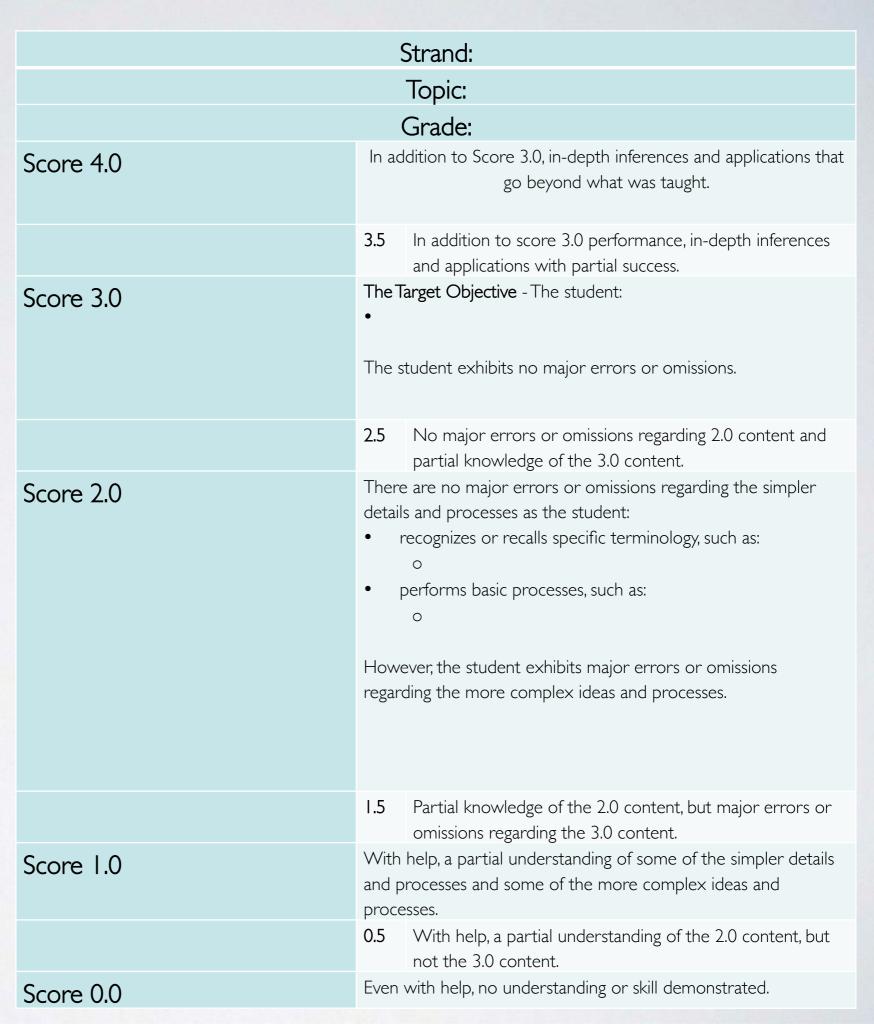
Students can investigate repeating patterns that occur with denominators 9, 99, or 11.

 $\frac{4}{9}$ is equivalent to $0.\overline{4}$, $\frac{5}{9}$ is equivalent to $0.\overline{5}$, etc.



Proficiency Scales

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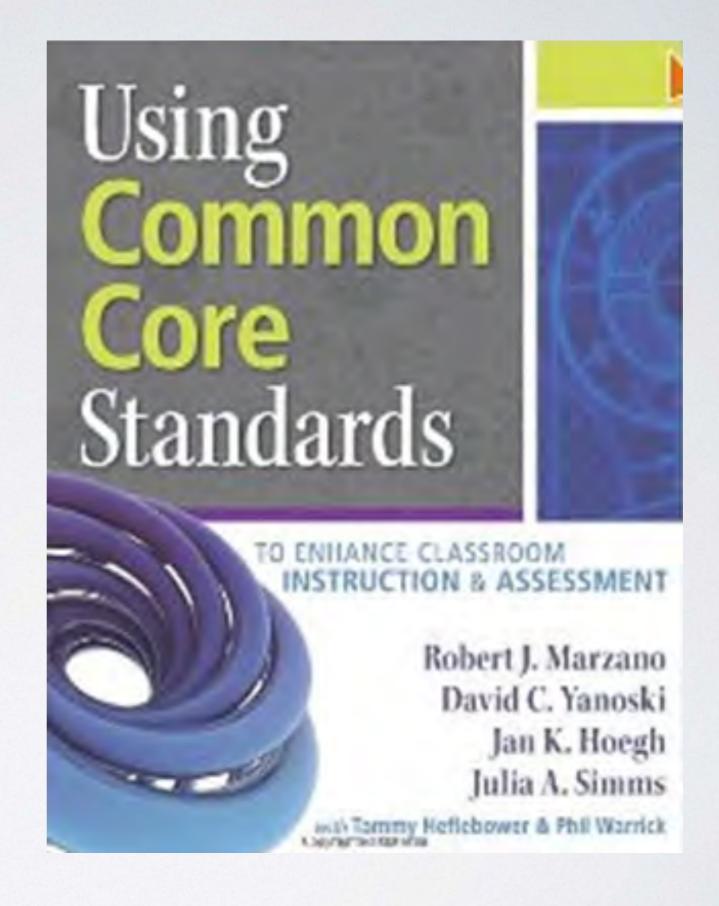






Proficiency Scales

©2010 Marzano Research Laboratory







Common Assessments Perhaps the most widely quoted definition of formative assessment comes from Black and Wiliam (1998) who state that formative assessment

...refers to all those activities undertaken by teachers, and by the students in assessing themselves, which provide information to be used as feedback to modify the teaching and learning activities in which they are engaged. Such assessment becomes formative when the evidence is actually used to adapt the teaching to meet needs. (p.2)





Common Assessments

According to the research literature, some of the key elements of formative assessment include:

- identification by teachers and students of learning goals, intentions or outcomes and criteria for achievement,
- conversations (with feedback) between teachers and students that build on what is known and what is to be learned,
- active involvement of students in their own learning, and
- teachers responding to identified learning needs and strengths by modifying and/or adapting teaching strategies, materials and approaches (Black & Wiliam, 1998; Boston, 2002; Fontana & Fernandes, 1994; Fredrickson & White, 1997; Guskey, 2003; Liang & Creasy, 2004; Shepard, 2000; Stiggins & Conklin, 1992; Stiggins, 1992).





Common Assessments

Keys to a Formative Assessment Process

To determine if an assessment process is formative ask:

- Is it used to identify students who experience difficulty in their learning? Or, students who already met the learning target?
- Do students receive additional time and support for learning when they experience difficulty? Or, accelerate more in-depth knowledge in the learning progressions for students already meeting the target?
- Do students get additional opportunity to demonstrate their learning?
- Do teachers use the results to inform and improve their individual practice?

TEAM TALK:

Use the above questions to evaluate how your teams use assessments.

What do you need to do differently to have the use formative assessments more appropriately if they are not?





Common Assessments

The Case for Formative Assessments

- When developed through teacher learning communities, formative assessments promise the largest potential gains in student achievement.
- Few initiatives in education have had such a strong body of evidence to support a claim to raise standards.
- They are one of the most powerful, high-leverage strategies for improving student learning.
- Common assessments are consistently used by schools with the greatest student achievement.
- Common assessments enable educators to diagnose student learning needs in time to make instructional modifications.
- Common assessments form the basis of professional dialogue in schools that double student achievement.





Common Assessments

We Undermine the PLC Process When We Settle for...

- Substituting textbook assessments or commercial assessments for teamdeveloped common assessments
- Using common assessment results merely to assign grades
- Doing nothing with common assessment results





Common Assessments

The Case for Formative Assessments

It is the attention to the purposes of innovations, the willingness to seek negative evidence (i.e., seeking evidence on where students are not doing well) to improve the teaching innovation, the keenness to see the effects on all students, and the openness to new experiences that make the difference. Interventions are not 'change for change's sake' as not all interventions are successful. The major message is for teachers to pay attention to the formative effects of their teaching, as it is these attributes of seeking formative evaluation of the effects (intended and unintended) of their programs that makes for excellence in teaching.

(Hattie, Visible Learning: A Synthesis of Over 800 Meta-Analyses Relating to Student Achievement, p. 181)





Common Assessments

The Case for Formative Assessments

Rank Influence on S.A.

 1. 2. 3. 	Self-report grades Piagetian programs Provide formative eval.	0.90	1.44
10. 11.	Feedback Teacher-stud. relations	0.73 0.72	
31. 32.	Home environment SES		0.57 0.57
45. 106. 121.	Parental involvement Class size Ability grouping	0.51	0.21

Out of the top 45 most influential factors on student achievement, 3 factors associated with the home, 4 factors associated with the student, 5 factors associated with the school, 5 factors associated with the teacher (i.e. teacher-student relationships), 8 factors associated with curricula, and 20 factors associated with teaching.

(Hattie, Visible Learning: A Synthesis of Over 800 Meta-Analyses Relating to Student Achievement, pp. 297-298)





Feedback

Feedback

Effective Feedback Answers 3 Questions:

Feed Up: Where am I going? (the goals)

Feed Back: How am I going? (doing)

Feed Forward: Where to next?

Each feedback question works at 4 levels:

Task Level: How well task are understood/performed

Process Level: The process needed to understand/perform tasks

Self-regulation Level: Self-monitoring, directing and regulating of actions Self Level: Personal evaluations and effect (usually positive)

on the

learner

(Hattie, Visible Learning: A Synthesis of Over 800 Meta-Analyses Relating to Student Achievement, p. 176)





Common Assessments http://www.ket.org/education/video/ksenb/ksenb_000136.htm



Turn & Talk

What were a couple of key elements regarding common assessments and providing feedback? How will you support your teams to further develop their work in these areas?





The PLC process is not weekly planning/coordination of lessons.

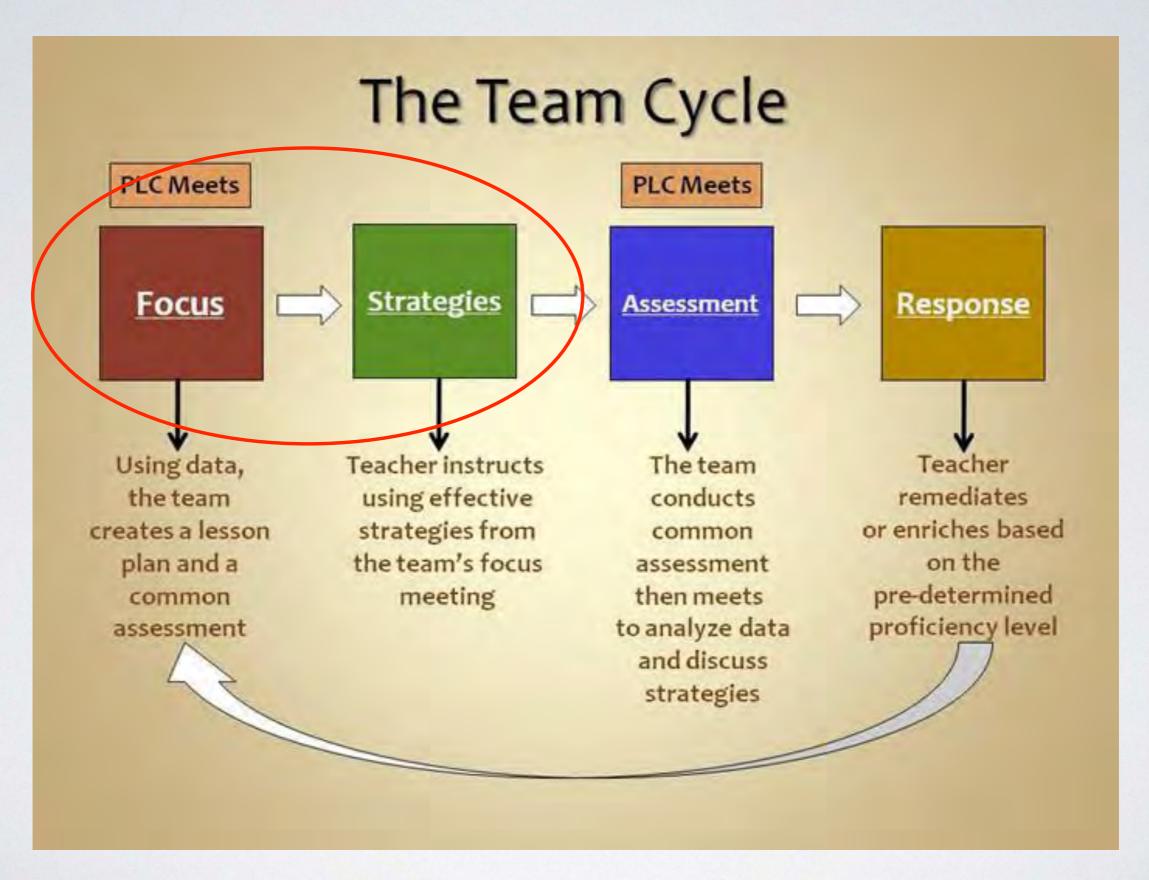
The PLC process <u>is</u> an ongoing CYCLE of INQUIRY.



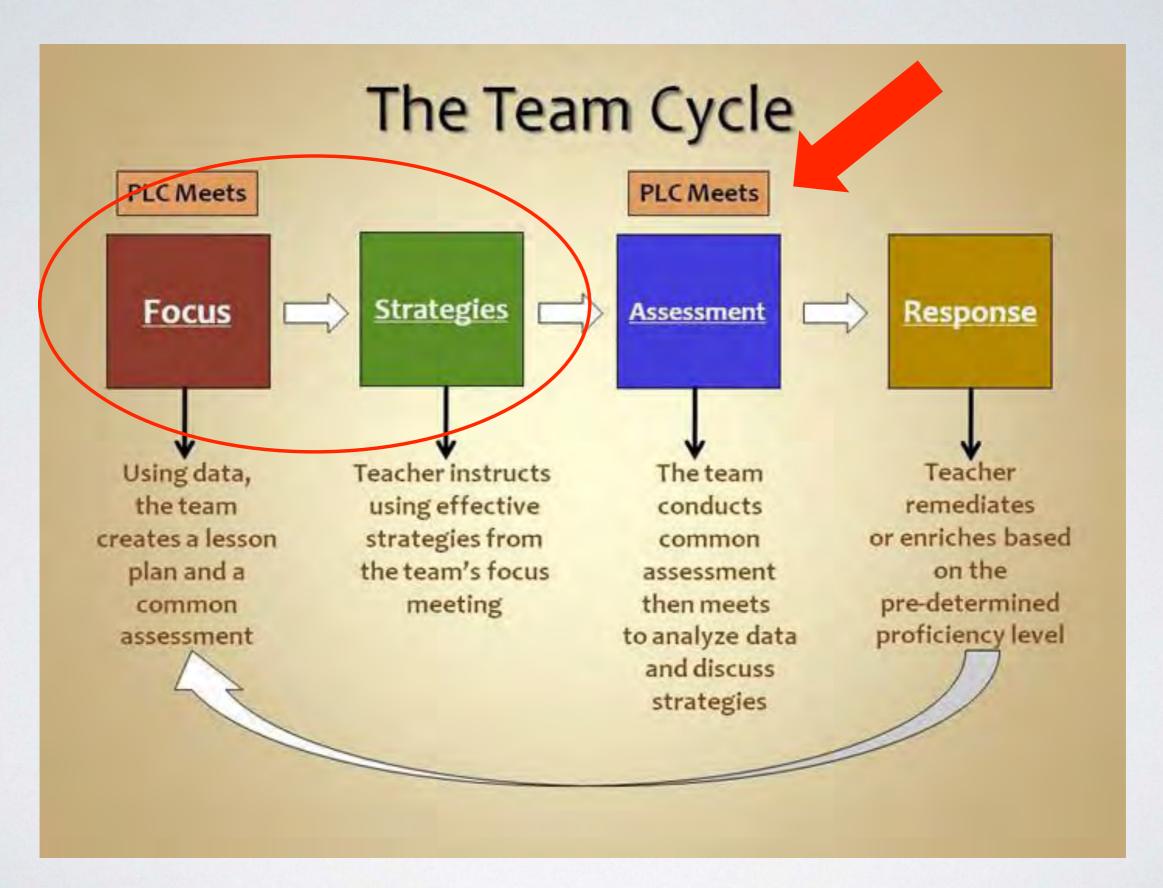


The Team Cycle **PLC Meets PLC Meets Strategies Focus** Assessment Response Teacher Using data, Teacher instructs The team using effective remediates the team conducts or enriches based strategies from creates a lesson common plan and a the team's focus on the assessment pre-determined meeting then meets common proficiency level to analyze data assessment and discuss strategies

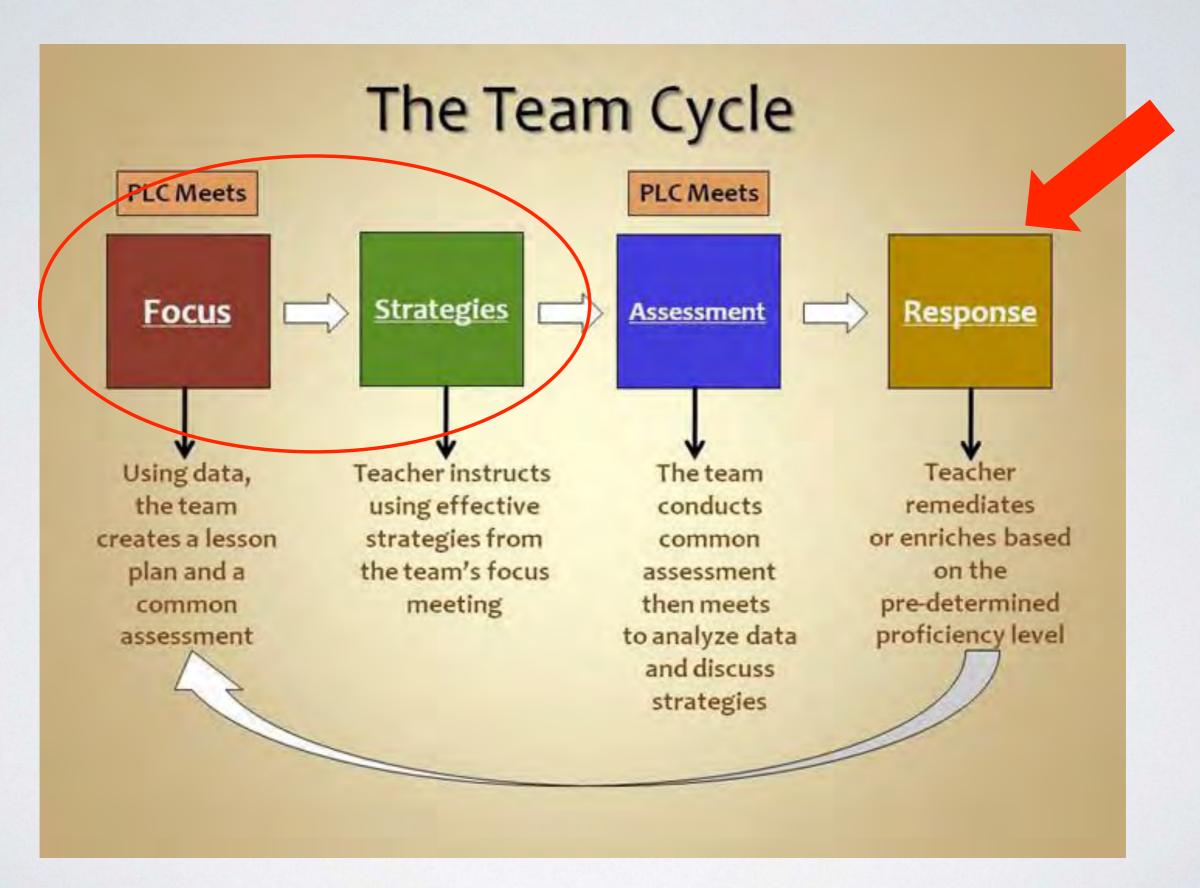




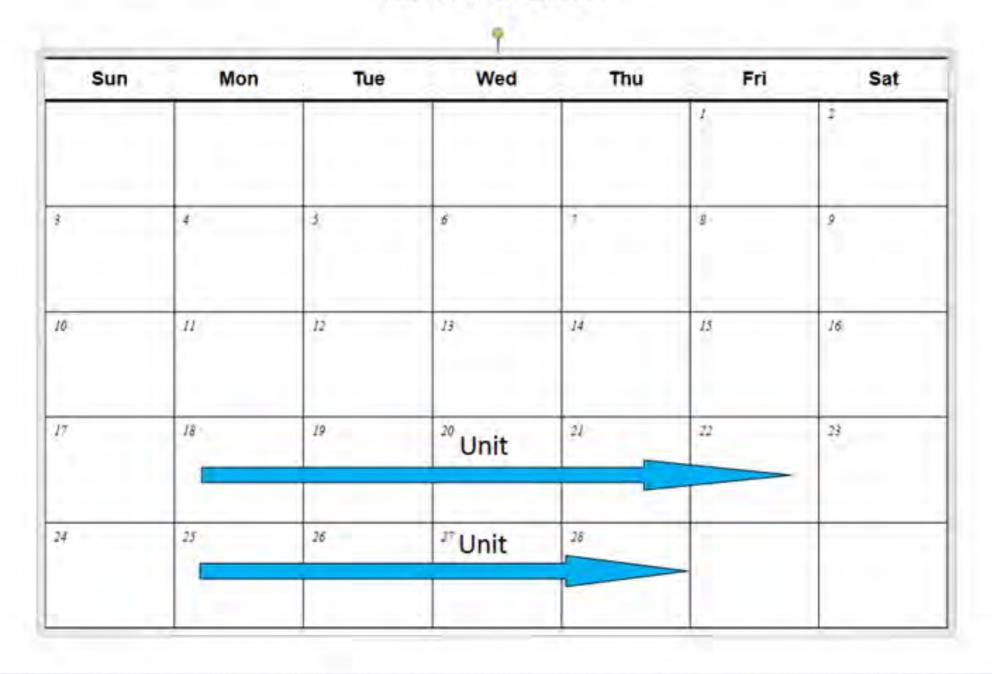














Sun	Mon	Tue	Wed	Thu	Fri	Sat
		PLC MTG			1.	2
3	4	PLC MTG	6	2	8	9
10	11	PLC MTG	13	14	25	16
17	18	19PLC MTG	²⁰ Unit	21	22	23.
24	25	26PLC MTG	2 [†] Unit	28		

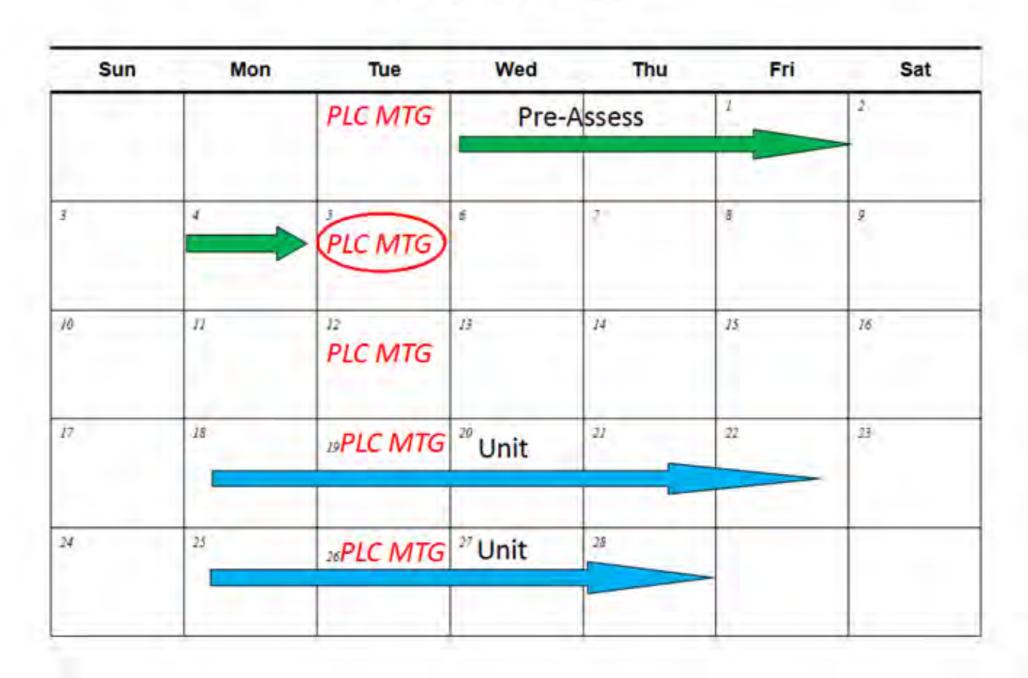


Sun	Mon	Tue	Wed	Thu	Fri	Sat
		(PLC MTG)			1	2
3	4	PLC MTG	6	2	8	9
10	11	PLC MTG	13	14	15	16
17	18	19PLC MTG	²⁰ Unit	22	22	23
24	25	26PLC MTG	²⁷ Unit	28		

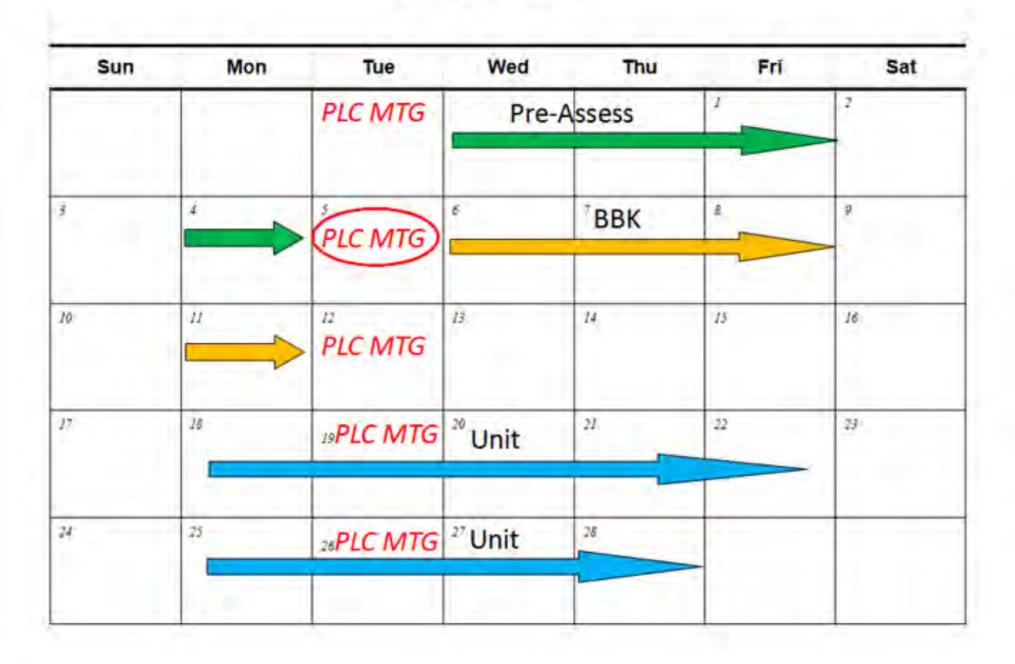


Sun	Mon	Tue	Wed	Thu	Frí	Sat
		PLC MTG	Pre-/	Assess	1	2
,	*	PLC MTG	δ	7	δ	g
10	П	PLC MTG	13	14	15	16
17	18	19PLC MTG	²⁰ Unit	21	227	23
24	25	26PLC MTG	²⁷ Unit	28		

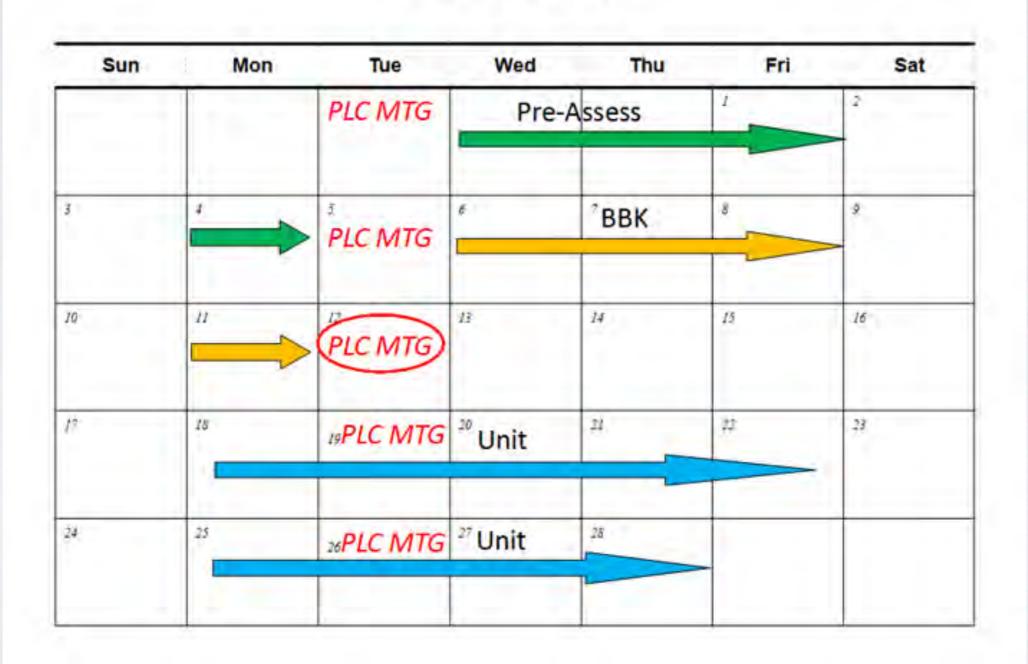




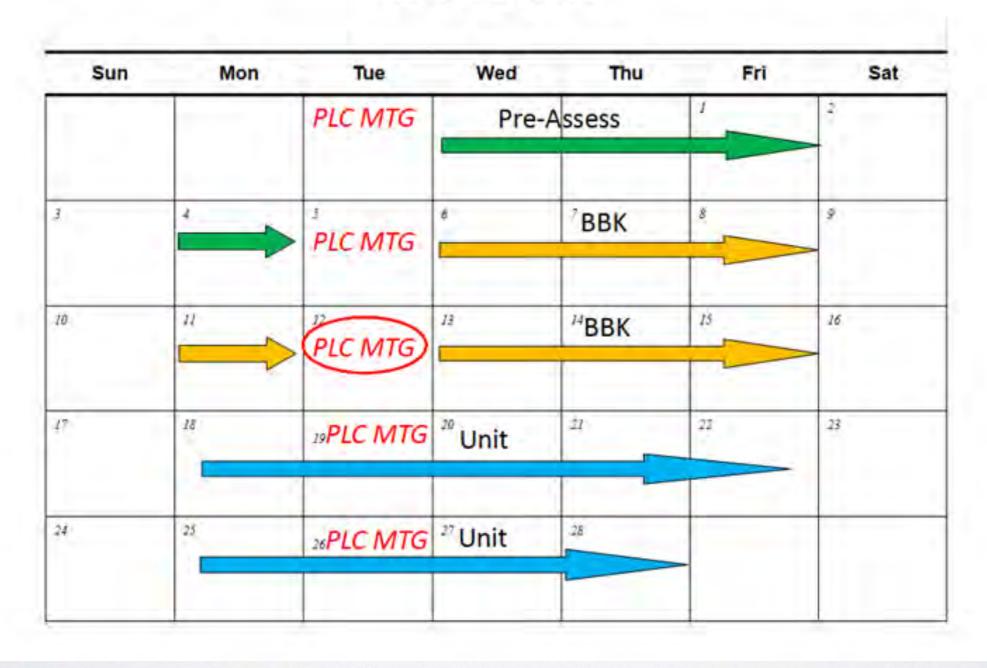




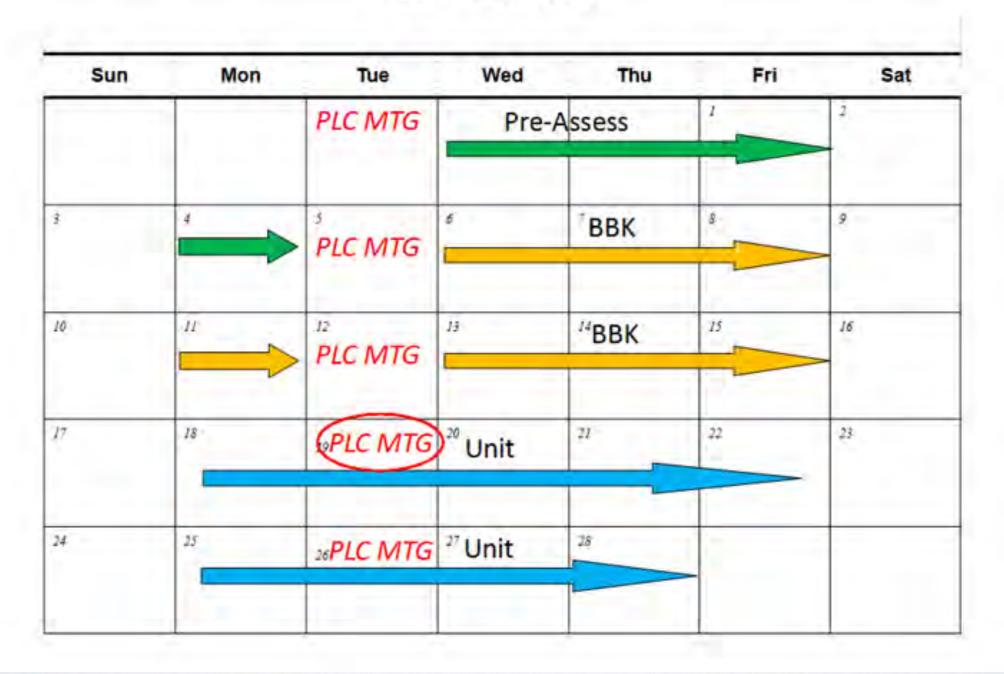




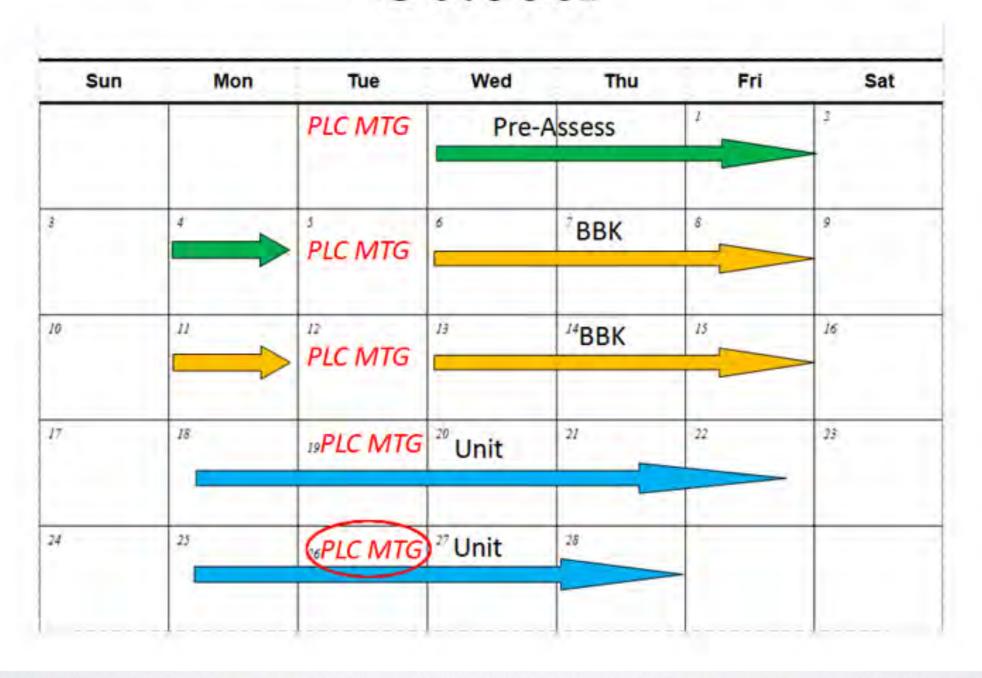








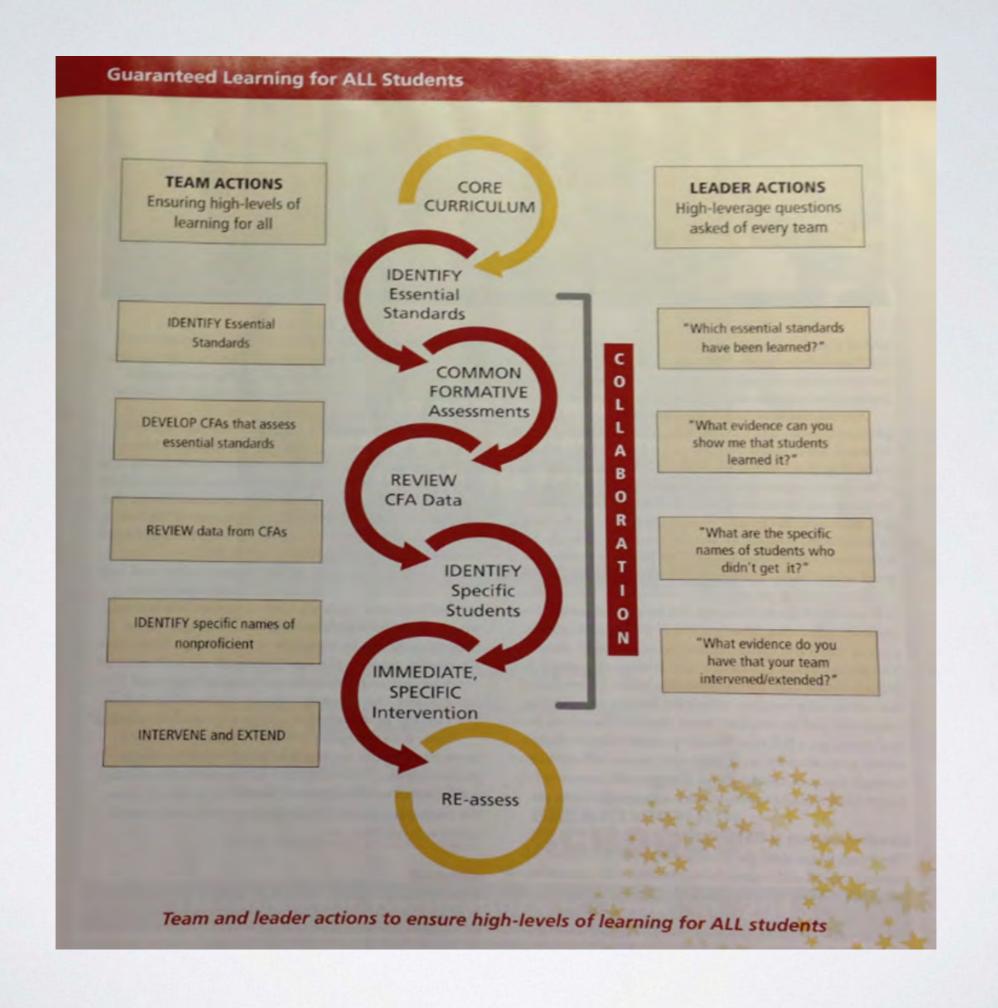






The Team Cycle **PLC Meets PLC Meets Strategies Focus** Assessment Response Teacher Using data, Teacher instructs The team using effective remediates the team conducts or enriches based strategies from creates a lesson common plan and a the team's focus on the assessment pre-determined meeting then meets common proficiency level to analyze data assessment and discuss strategies









Focus on Learning Making Data Useful AFE Video





PLCTimeline

Suggested Timeline for PLC Activities

	I st MP	2 nd MP	3 rd MP	4 th MP
	Set Norms	Review Norms	Review Norms	Review Norms
	year (schedule,	• Implement strategies in the classroom	• Implement strategies in the classroom	• Implement strategies in the classroom
	location, long-range planning calendar,	Cycles of Inquiry	Cycles of Inquiry	Cycles of Inquiry
PLC Activities	 Planning Calendar, roles) Review needs data (DCAS, School Success Plan, etc.) Establish PLC SMART Goals Implement strategies in classroom Share learning with PLC Determine Common Assessments Determine PLC documentation strategies (artifacts) 	 Use Protocols for looking at student work Review Common Assessments Peer observations Lesson Studies Action Research Document work Monitor progress towards SMART Goals 	 Use protocols for looking at student work Review Common Assessments Peer observations Lesson Studies Action Research Document work Monitor progress towards SMART Goals 	 Use protocols for looking at student and teacher work Review Common Assessments Peer observations Lesson Studies Action Research Document work Monitor progress towards SMART Goals
Student Data & Sources	Test scores (DCAS, DIBELS, Common Assessments, etc.)	 Test scores (DCAS, DIBELS, Common Assessments, etc.) Student assignments Teacher observations Exit tickets Other formative assessments 	 Test scores (DCAS, DIBELS, Common Assessments, etc.) Student assignments Teacher observations Exit tickets Other formative assessments 	 Test scores (DCAS, DIBELS, Common Assessments, etc.) Student assignments Teacher observations Exit tickets Other formative assessments
Resources	School Success PlanDistrict Strategic PlanCommon Core StandardI-Tracker Pro	ds		



PLCs are professional development.

Do you agree or disagree with this statement? Explain.

Thumbs-Up/Thumbs-Down/ Neutral







Professional Development

Sparks and Hirsch (nd), who recommend the following national professional development model for teachers:

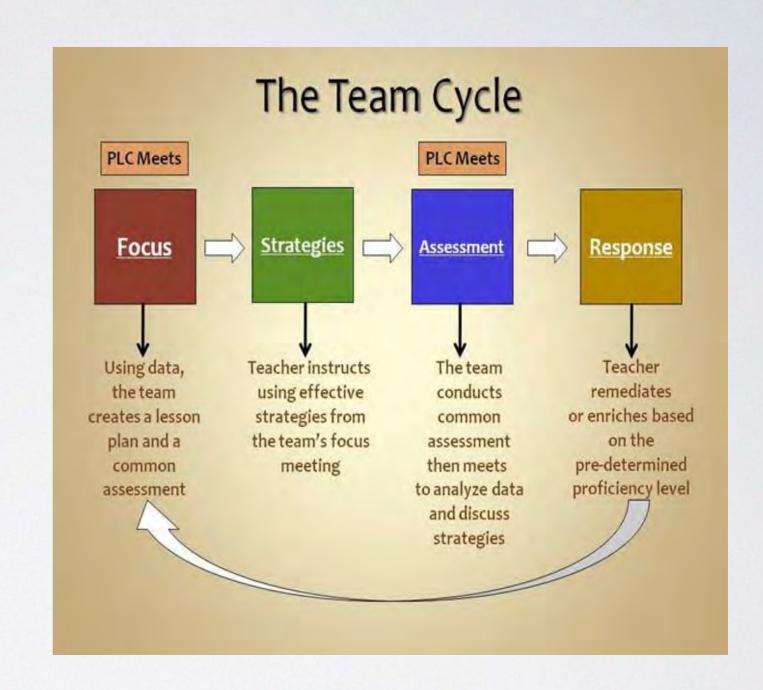
- Create learning schools in which all staff are involved in "sustained, rigorous study of what they teach and how they teach it" (p. 11).
- Provide time for teacher professional development equaling 25 percent of time during each day for teachers to work together and to collaboratively plan lessons and share information.
- Base professional development on the collaboration model—teachers learning from each other.

This model is not unlike the one in place in Japanese schools.



Job-Embedded PD

- Lesson Study
- Action Research
- Application of Information from Book Study
- Application of Information from stand & deliver PD
- Peer Observations
- Peer Coaching





Transform Professional Development

Process-Driven

Consensus of Opinion

"Pull Out"

Provider-Driven

Individual Learning

Generic Pedagogy

Focus on Teacher "Duties" **Results-Driven**

Research-Based Standards

Daily Job-Embedded Structures

Teacher-Driven

Team Learning

Content-Specific Pedagogy

Focus on Student Achievement



Grand Rounds and Instructional Rounds

Read the "Third Principle" (pp. 27 – 30).

Discuss with your team:

What information presented today relates to the situation discussed in the article?

Collaboration

How could you use PLCs to improve the situation presented in the article?





PLCTime

PLC Time is Sacred Time

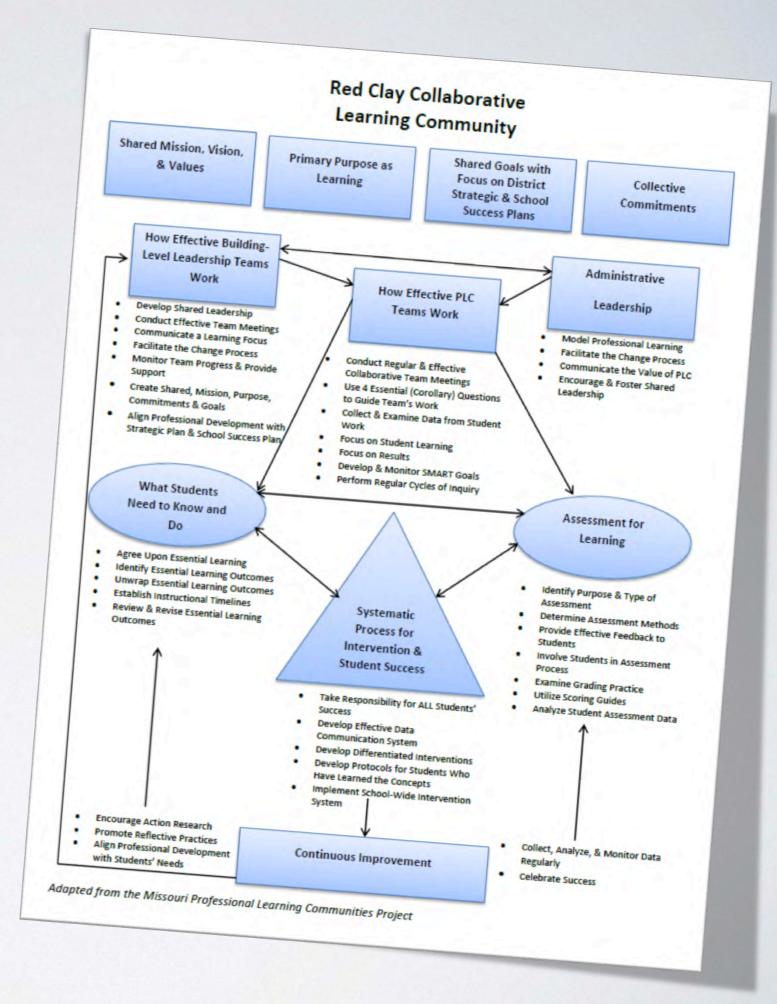
For learning teams to reach their full potential it is critical that they have ample opportunities to act and lead within those boundaries with minimal interruptions by activities that do not align with the instructional goals outlined the District Strategic Plan and School Success Plan. It is expected that PLC meeting times not be considered a repository of time where time can be taken from for other activities. School districts that have made great gains in student achievement ensured that PLC is "sacred" time for teachers to work together as professionals.

PLC time is NOT sit and get workshops!



Collaborative Learning Community

- 4 Pillars
- Connect Administrative
 Teams BLT PLC
- Continuous
 Improvement Cycle





Professional Development Flowchart

PLC

Develops instructional plan

Identifies instructional needs,
resources, and professional
development needs

SchoolStream

PLC Instructional Plan and PLC minutes

BLT

Reviews PLCs' instructional plans

Decides instructional needs, resources, and professional development

Makes suggestions on who is responsible for each of the deliverables

SchoolStream

PLC Instructional Plan,
PLC minutes, and
BLT Monthly Review

Curriculum & Instruction

Reviews BLT Monthly Review forms, PLCs' instructional plans, and minutes

Makes suggestions on how to provide support

SchoolStream

PLC Instructional Plan,
PLC minutes, and
BLT Monthly Review





Empowerment

Defined Autonomy:

Simultaneous loose and tight cultures establish clear parameters and priorities that enable individuals to work within established boundaries in a creative and autonomous way. PLCs are characterized by 'directed empowerment' or what Marzano and Waters refer to as 'defined autonomy' – freedom to act and lead within clearly articulated boundaries."

- DuFour & DuFour (2012); Marzano & Waters (2009)





Empowerment

Empowerment:

Effective empowerment does not mean encouraging people to go off and do whatever they want. It means creating the conditions that help people succeed. Those conditions include:

- I. Establishing clear purpose, priorities, and parameters that allow people to be creative and autonomous within clearly established boundaries.
- 2. Providing people with access to the resources that enable them to make informed decisions rather than pooling opinions.
- 3. Engaging them in establishing clear, unambiguous benchmarks so they can monitor their own progress.
- 4. Ensuring they have relevant and timely data that informs their practice and allows them to make adjustments.
- 5. Building the capacity of people to be successful in what they are attempting to do by providing them with training, support, and resources that lead to success.

Empowerment means establishing a culture in which people are hungry for evidence and are willing to face the brutal facts when things don't go as hoped.

(DuFour & Marzano, 2011)





Learning by Doing

Learning by Doing

"Capacity building...is not just workshops and professional development for all. It is the daily habit of working together, and you can't learn this from a workshop or course. You need to learn it by doing it and having mechanisms for getting better at it on purpose."

(Fullan, 2005)





PLC Process

The Heart of the PLC Process

Two years of working in collaborative teams: no gains.

It wasn't until the teams...

- established a guaranteed curriculum,
- monitored student learning through common assessments,
- and used the evidence of student learning to identify and solve problems through new instructional strategies,

...that student achievement soared.

(Gallimore, Emerling, Saunders, & Goldenberg, 2009)





PLC Process

McKean PLC Video





PLC Classroom Practice Student Achievement

"Talking is not doing. Planning is not doing. Goal setting is not doing. Training is not doing. Even directing resources to support a plan is not doing. It is not until people are *doing differently* that any organization can expect different results." Rick DuFour

Doing



An Act Of Futility

If we continue to take in data as we have always taken in data,

Then we will continue to think as we have always thought.

If we continue to think as we have always thought,

Then we will continue to believe as we have always believed.

If we continue to believe as we have always believed,

Then we will continue to act as we have always acted,

Then we will continue to get what we have always gotten.



Doing

Doing the Right Work

Educators work collaboratively and take collective responsibility for student learning.

Collaborative teams implement a guaranteed and viable curriculum, unit by unit.

Collaborative teams monitor student learning through ongoing common formative assessments.

Educators use the results of common assessments to:

- Improve individual practice
- Build the team's capacity to achieve its SMART goals
- Intervene on behalf of students

The other steps on the PLC journey are designed to help teams engage in this essential work.





Doing

Doing the Right Work

Is our PLC committed to fostering collective responsibility for improved student performance?

Is our PLC aligned with rigorous state student academic achievement standards as well as related local educational agency and school improvement goals?

Is the PLC facilitated by well-prepared school principals and/or school-based professional development coaches, mentors, master teachers, or other teacher leaders?

Do the communities convene several times per week or the equivalent of several hours?

Do the professionals organize into teams of teachers, principals, as well as other instructional staff members?

Is the PLC engaging in a defined continuous cycle of improvement?

Is the PLC evaluating student, teacher, and school learning needs through a thorough review of data on teacher and student performance?

Is the learning based on the rigorous analysis of the data and a definition of clear educator learning goals?





Doing

Doing the Right Work

Is the learning characterized by implementing coherent, sustained, and evidenced-based learning strategies, such as lesson study and the development of formative assessments, that improve instructional effectiveness and student achievement?

Is the learning supported by job-embedded coaching or other forms of assistance to promote the transfer of new knowledge and skills to the classroom?

Is the PLC assessing regularly the effectiveness of the professional development in achieving identified learning goals, improving teaching, and assisting all students in meeting challenging state academic achievement standards?

Is the PLC using assessment findings to inform ongoing improvements in teaching and student learning?

Is the PLC tapping external assistance when it finds it does not have the internal expertise to achieve its goals?

Stephanie Hirsh
Executive Director, Learning Forward



Cultural Shifts

- Shift in Fundamental Purpose
- Shift in Assessment
- Shift in Response When Student Don't Learn

REPRODUCIELE

Cultural Shifts in a Professional Learning Com

	oressional Learns
From a focus on teaching	A Shift in Fundamental Purpose
Erro d locus on teaching	The Fundamental P
From emphasis on what was to	1 UI DOSO
From covera-	alight to a locus on loc
From coverage of content	to a five:
From providing individual teach curriculum documents such as a standards and	to a fixation on what students learned to demonstration of profisi
curriculum documenta teach	ners with
curriculum documents such as s standards and curriculum quite	State to engaging Proficiency
standards and curriculum guides	shared knowledge teams
From inc	to engaging collaborative teams in buildin curriculum
From infrequent summative asses From assessments to determine a	
From assessments to determine w	SSMente
Idiled to 1	Whier guell com-
students failed to learn by the deal punish students	which to assessments to identify students additional need addition.
punish start	Idline need and in identify
Students Cward	and "dullional to "Judenta"
- Tolli assessing	dssessment support
From individual teacher assessments	students and to inform and many
teacher assessment	to assessing a few things frequently
From	
From each teacher determining the critical to be used in assessing student work	to assessments developed jointly by
be used in assessing at the cr	collaborative teams
to be used in assessing student work .	
From an over-relie	
From an over-reliance on one kind of	to collaborative teams clarifying the criteria members when are
From focus	and ensuring consistency among team members when assessing student work to balanced assessments
locusing on average so	to balanced assessments
From focusing on average scores	- This
A Chic	to monitoring each student's proficiency in
From individual in the Response	every essential skill
appropriate a teachers determine	se When Students in
From individual teachers determining the appropriate response	to monitoring each student's proficiency in se When Students Don't Learn
rom fixed time and support for learning	to a systematic response that ensures
om remediation	support for every student
Om invit	to time and and
nool de	to internal support for learning
om invitational support outside of the	to time and support for learning as variables
	" UIFCTON "
ning	occurring during the school day
- autie	to multiple opportunities to demonstrate
	learning opportunities to demonstrate
	demonstrate





Cultural Shifts

- Shift in Work of Teachers
- Shift in Focus

REPRODUCIBLE

From isolation	in the	Work of Teachers
From each teacher clarifying what students must learn		to a focus on learning
From each teacher assigning priority different learning standards From each teacher determining the particulum	to and achieves to a short to a s	knowledge and understanding about essential learning to collaborative teams establishing the priority of respective learning standards to collaborative teams of teachers agreeing concommon pacing of collaborative teams of teachers helping of open sharing of practice decisions made collectively by building ared knowledge of best practice collaboration explicitly focused on issues questions that most impact student in assumption that these are "even about the collection of the collecti
From an external focus on issues outside of	ft in Foo	us
from a focus on inner	take t	internal focus on steps the staff can
From goals related to completion of project and activities From teachers gathering data from their dividually constructed tests in a sign great.	to a focus on results to SMART goals demanding evidence of	
grades	from cor from cor (1) inform practice:	porative teams acquiring information mmon assessments in order to and their individual and collective and (2) respond to students who itional time and support

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Cultural Shifts

- Shift in School Culture
- Shift in PD

THE RESERVE OF THE PARTY OF THE		
THE REAL PROPERTY.		

From a lease	nift in School Culture
From a language	School Culture
From a language of complaint	to interdependence
From Strategic plans	to a language
From long-term strategic planning From infrequent generic re-	to a language of commitment
From infrequent generic recognition	planning for al
	il edilent
From external training A Shift in Pr	to frequent specific recognition and a culti- of celebration that creates many winner
From external training (workshops and	
	LO JOh-on-I
nfrequently (on the	- Thedded learning
rom presentati	and occurs as
rom presentations to entire faculties	to an expectation that learning is ongoing and occurs as part of routine work.
om learning by listening	NOIN Dractic
om learning individually through courses	to team-based action research
d workshops	
m assessing impact on the	to learning collectively to
om assessing impact on the basis of cher satisfaction ("did you like it?")	to learning collectively by working together
Il Short +	to assessing impact on the basis of evidence to sustained
ents - Aposure to	of improved student learning
cepts and practices	to sustained commitment to limited focused

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"Ultimately there are two kinds of schools: learning enriched schools and learning-impoverished schools. I have yet to see a school where the learning curves...of the adults were steep upward and those of the students were not. Teachers and students go hand and hand as learners...or they don't go at all."

-Roland Barth (2001), Learning by Heart



"Good ideas are not adopted automatically. They must be driven into practice with courageous impatience. Once implemented they can be easily overturned or subverted through apathy or lack of follow-up, so a continuous effort is required."

-- Admiral Hyman G. Rickover





DuFour Video



