

Lessons Learned: Taking Lesson Study to the Next Level

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AGENDA



What is Lesson Study?

Why is it needed now?

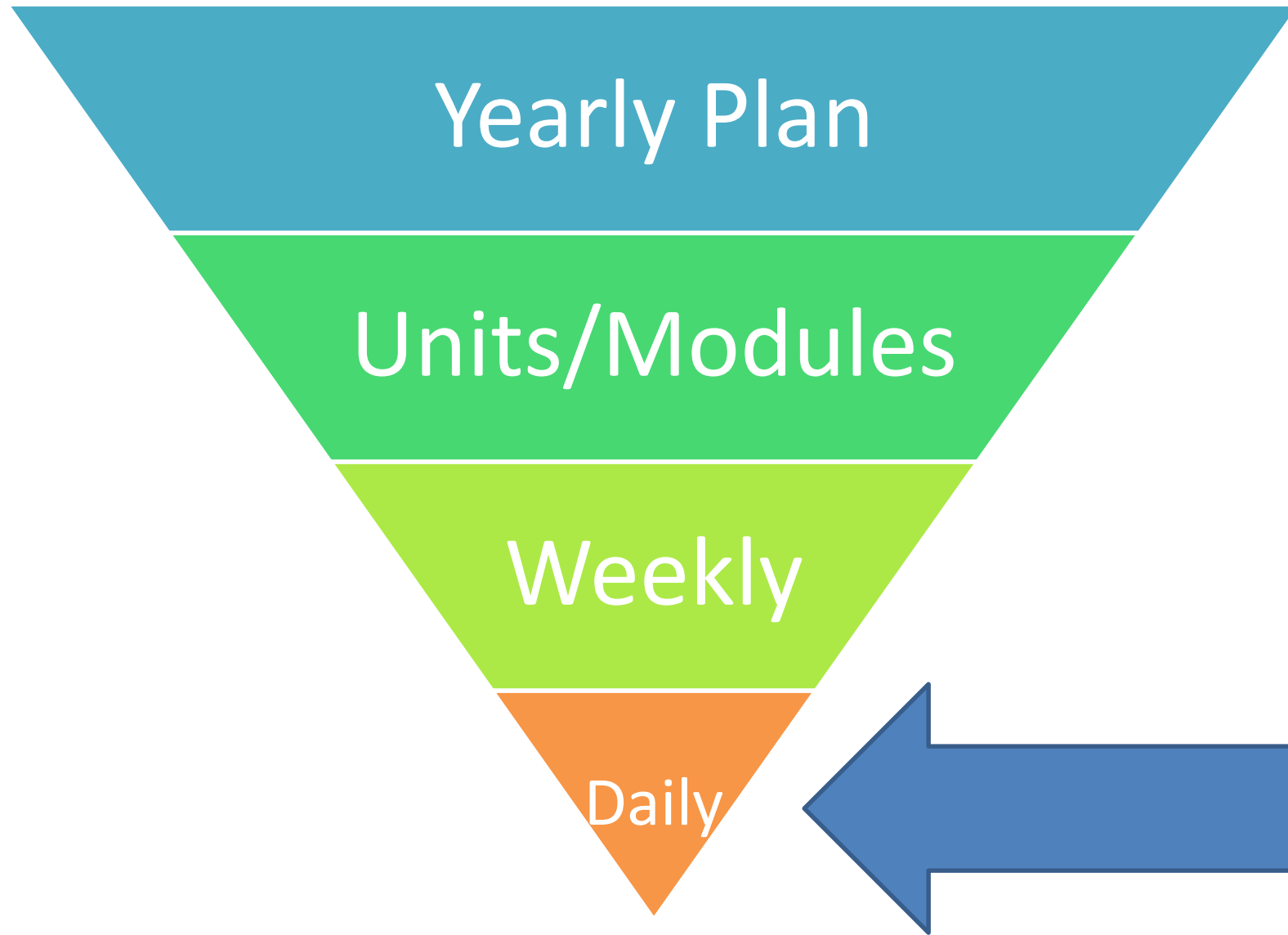
How is this different from what we've done in the past?

The Lesson Study process

- Identifying a Focus of Inquiry
- Lesson plan template
- Protocol to use for debriefing

What is Lesson Study?

Lesson study is action research that helps teachers come to a common understanding of high quality instruction. Teacher teams work together in a community of inquiry to build knowledge about how students learn in their discipline.



Why is it needed now?

Mathematics – Changing Outcomes

Previously

- Facts
- Procedures
- Simple Problem Solving

Now

- Conceptual Understanding
- Analyze and Model Relationships
- Complex Problem Solving

What do you **notice** about these statements?

What are the implications for **students**?

What are the implications for **teachers**?

Nothing happening...

“It is possible to have a smoothly functioning, lively classroom where all the students appear happily occupied with worthwhile tasks and yet no mental acts conducive to learning are taking place.”



Graham Nuthall, 2005

Teaching is one of the most public and yet socially isolating occupations. When you teach, you are surrounded by others all day long, yet you are usually the only adult in the room...

“Improving something as complex and culturally embedded as teaching requires the efforts of all the players, including students, parents, and politicians. But ***teachers must be the primary driving force behind change***. They are best positioned to understand the problems that students face and to generate possible solutions.”

How is this method of lesson study different from PD we've done in the past?

Failings of professional development...

- “When am I ever going to use this?”
- “Why can’t I work with my friends?”
- “I can do the math, but I’m not sure how to teach it...”
- “This is not the way I learned math...”



How do we reconcile teacher needs and school needs?

- For professional development practices to produce long-lasting and significant change, peer coaching duos or triads must take what they learned in training sessions, apply it in classrooms, and collaboratively study student response and student learning.
- "everybody, from the leaders to paraprofessionals, needs to engage in continuous action research that links PD content to the study of implementation, engagement in problem solving, and the study of student response (learning) in the short and long term" (p. 10).

Joyce, Hopkins, and Calhoun (2014)

Key Practices of Turn-Around Schools

Key Practices of Turn-Around Schools

1. Leadership, shared responsibility, and professional collaboration
2. Intentional practice for improving instruction
3. Providing student-specific instruction and supports to all students

Attributes of Lesson Study

1. Employ collaborative teams
2. Focus on student outcomes
3. Examine and adjust instruction



How do they fit together?

1. Leadership, shared responsibility, and professional collaboration (collaborative teams)
2. Intentional practice for improving instruction (focus on student outcomes, examining and adjusting instruction)
3. Providing student-specific instruction and supports to all students (focus on student outcomes, examining and adjusting instruction)



- ★ Standard I: Curriculum, Planning, and Assessment (Examining and adjusting instruction)
 - ★ A.4 Well-structured lessons
 - ★ B.2 Adjustments to practice
 - ★ C.2 Sharing conclusions with colleagues
- ★ Standard II: Teaching All Students (focus on student outcomes)
 - ★ A.2 Student engagement
- ★ Standard IV: Professional Culture (collaborative teams)
 - ★ A.1 Reflective practice
 - ★ A.2 Goal setting
 - ★ C.1 Professional collaboration

MA ESE Model Rubric for Teachers



**CURRICULUM
& INSTRUCTION**

Massachusetts Department of Elementary & Secondary Education



By design, PLCs overcome the isolated, fragmented cultures in which teachers usually work. Studies show that building strong professional learning communities – focused on improving instruction, curriculum, and assessment – will result in increased teacher collaboration and an increase in the use of effective instructional practices in classrooms, leading to improved student achievement.



<http://plcexpansionproject.weebly.com/>

PLC Expansion Project – MA DESE and CCE (Center for Collaborative Education) - 2013

The Lesson Study Process

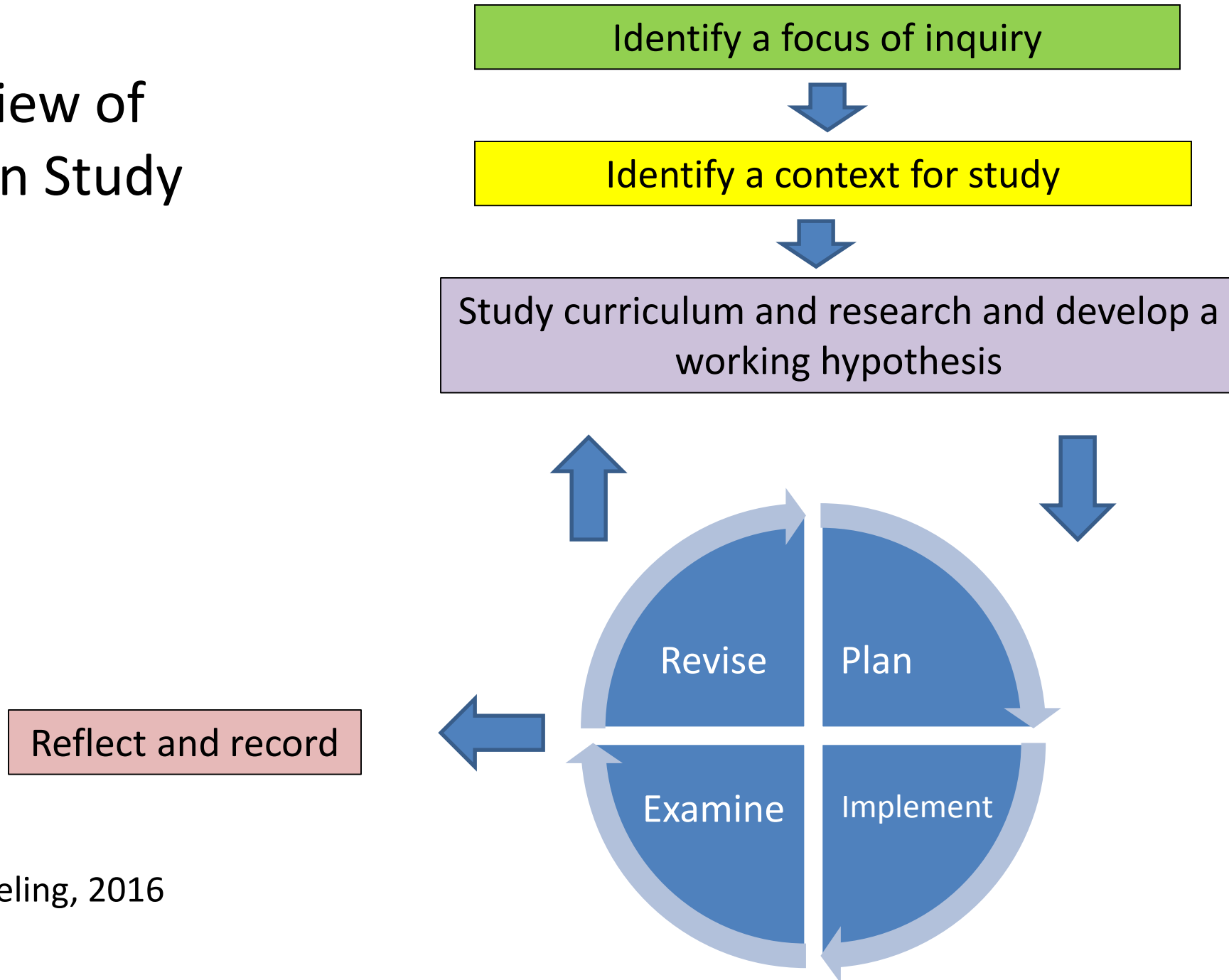
Case Studies

- Rural elementary school
- Years of decline - in danger of being taken over by the state
- Staff upheaval
- Heavy lift curriculum

- Rural middle school
- Math scores low and flat
- High variance in teaching among classrooms
- Wild west curriculum

Process and template were used with school districts through Massachusetts, at K-12 levels and with all core subjects

An Overview of the Lesson Study Process



Based on Ermeling, 2016

How many cycles?

- At least three cycles, spread throughout the school year
- You will need to plan for a training meeting before starting the process
- A session towards the end of the school year can be used to reflect on the experience and plan for the upcoming year

Teams of 3-4 teachers work best

NO



NOWHERE TO

NO

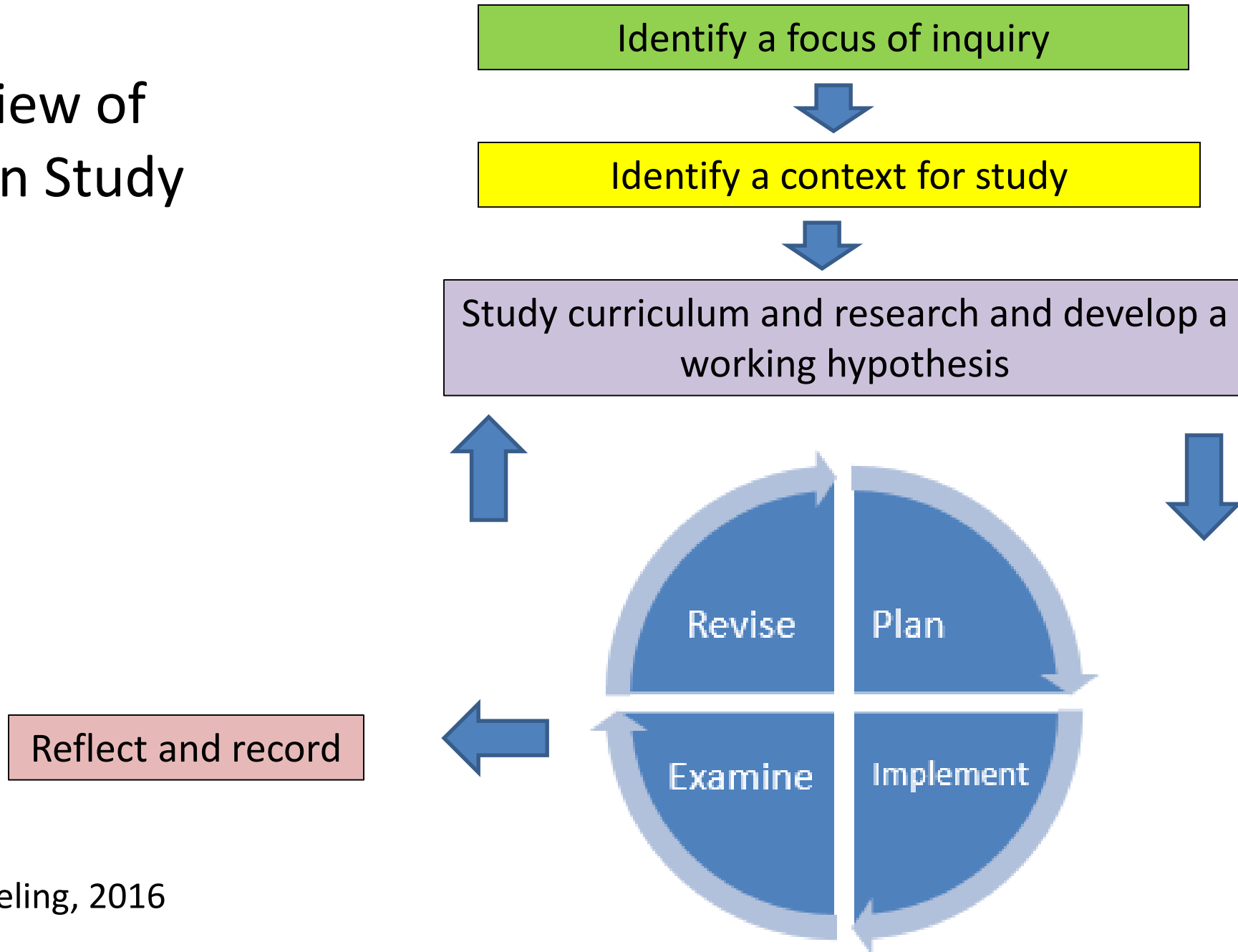


Have a moderator

- Preferably not an administrator
- Math coach
- Outside help
- Allows the teachers to focus on the lesson rather than the group dynamics
- Eventually the teachers become comfortable enough with the process that they can assume and rotate this role

A scribe (aka, typist) is also handy!

An Overview of the Lesson Study Process



Based on Ermeling, 2016

Identifying a Focus of Inquiry

- Teams use the same Focus of Inquiry for the entire lesson study cycle
- May be chosen by administration (school-wide focus) or the study team (grade or content specific focus)
- Focuses the planning, execution, and data collection of the lessons
- Work together to craft a statement (mission/vision)

Focus of Inquiry: Mathematics

- Standards for Mathematical Practice
- Incorporating manipulatives
- Using models for problem solving
- Relating algebra to arithmetic
- Complex problem solving
- Problem based learning
- Application of learned skills to real world situations
- Use of data sets in problem solving

Focus of Inquiry: Across Content Areas

- Effective questioning techniques
- Grouping strategies to foster engagement
- Using discourse to promote student learning
- Written response as a means of demonstrating understanding
- Use of academic vocabulary
- Writing informative/explanatory texts
- Problem based learning
- Engaging in argument based on evidence
- Literacy standards as they relate specifically to content areas

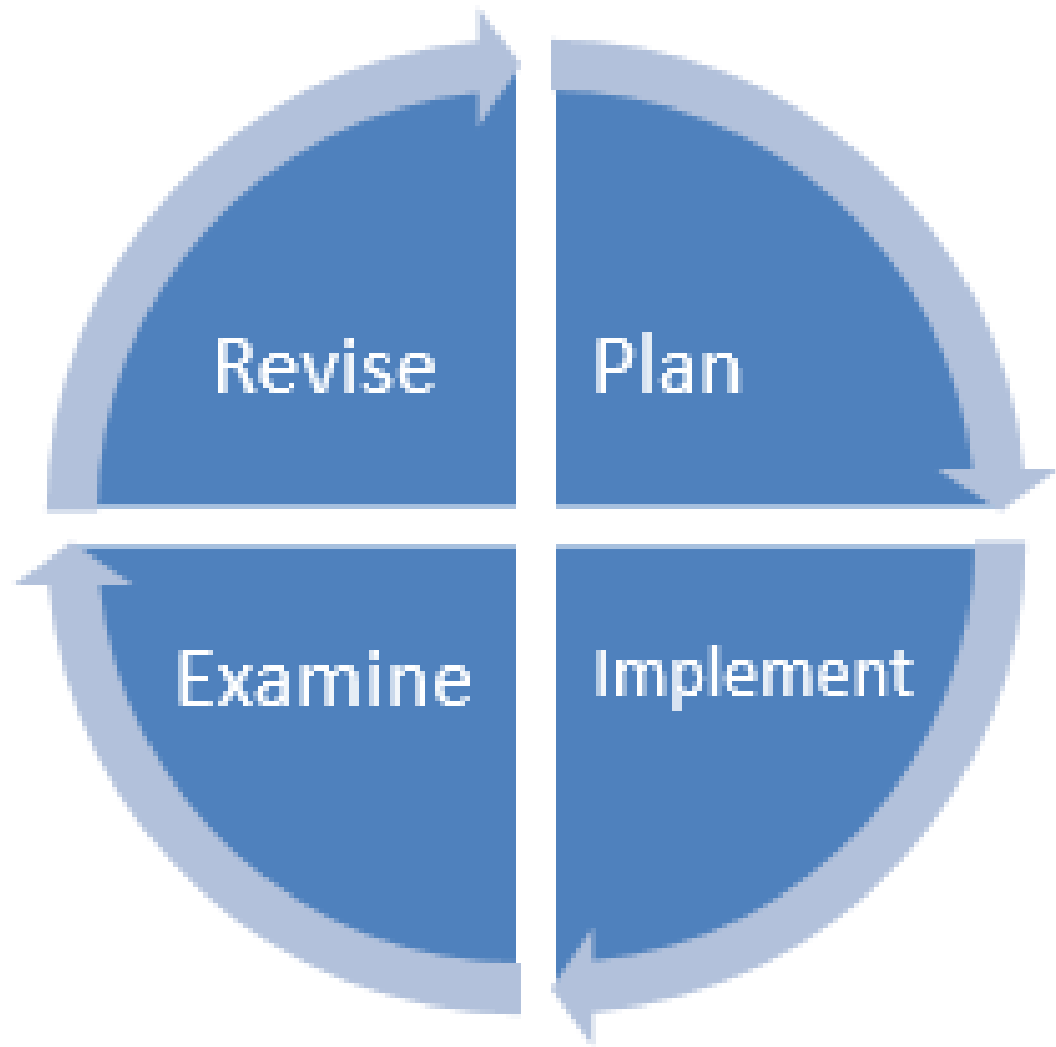
Identify a Context for the Study

- Elementary level (Grades K through 5 or 6)
 - Usually by grade level if teachers are generalists
 - Can pair grades if teachers are departmentalized
 - May take on a math/science focus
- Secondary level (Grades 6 or 7 through 12)
 - Usually by department, unless the school is large enough to have 3-4 teachers with the same course
 - Middle school may take on a math/science focus if both are taught by the same teacher

Study the curriculum – develop a hypothesis

- Use data (acquired or observational)
- Root cause analysis
- Priorities

Having a moderator is extremely helpful for this section



Using a planning
template and
protocols to guide
the study

Why use a template?

- Helps focus the group's attention
- Has all the desired/required elements
- Moves them away from the book
- Provides a structure to include scaffolds and supports
- Includes Closure and Assessment, which are often missing from lessons
- As a Word or Google doc, can be typed into directly, creating a record for future use

Possible Approaches

- Develop an entirely new lesson
- Teaching a lesson from a new curriculum
- Increasing the rigor of an existing lesson
- Increasing the level of student engagement and learning in an existing lesson
- Addressing misconceptions that students have previously demonstrated
- Providing more hands-on opportunities for students in a lesson
- Trying out a new way to teach a concept
- Modeling a concept
- Providing more differentiation in an existing lesson

Who goes first? The Action Teacher

- Volunteer, or chosen? Everyone will get a turn eventually
- Ideally this is decided before planning
- Often depends on team dynamics



Lesson Study: Planning



Date:	Team Members:	
Focus of Inquiry: <i>(Problem of practice)</i>		
Context of Lesson: <i>(Grade level and course)</i>		
Lesson Title:		
Standard(s): <i>(Include practice/process standards)</i>		
Learning Target/Success Criteria: <i>(Stated in student-friendly language)</i>		
Materials needed: <i>(Include a list of student handouts if applicable)</i>		Vocabulary focus: <i>(Academic language which will be used by teacher and students)</i>

Lesson sections

- Intro/Launch
- Task/Work Time
- Closure/Summary
- Assessment

Lesson Component: Intro/Launch

INTRO/LAUNCH	
Time Allotted:	Grouping Strategy:
Teacher Actions <ul style="list-style-type: none">• <i>What is your "hook?"</i>• <i>How will you present the Learning Target/Success Criteria?</i>• <i>Which vocabulary will you emphasize?</i>• <i>What questions will you use to gauge student understanding and/or prior knowledge?</i>• <i>How will you address gaps and misconceptions?</i>	Student Actions <ul style="list-style-type: none">• <i>What are students expected to do?</i>• <i>What student discourse do you expect?</i>
TASK/WORK TIME	

Lesson Component: Task/Work Time

TASK/WORK TIME	
Time Allotted:	Grouping Strategy:
Teacher Actions <ul style="list-style-type: none">• <i>What questions will you use to drive student learning?</i>• <i>How will you "check in" with students?</i>• <i>What extension is available for students who finish early?</i>• <i>What supports are available for students who need them?</i>	Student Actions <ul style="list-style-type: none">• <i>What are students doing during this phase?</i>• <i>What process are students using?</i>• <i>What product will they produce?</i>• <i>Have you considered potential pitfalls?</i>

The Structure of a Task: Closing/Summary

CLOSING/SUMMARY	
Time Allotted:	Grouping Strategy:
<p>Teacher Actions</p> <ul style="list-style-type: none"><i>What discussion questions will you use?</i><i>Do you have a way to capture student comments/questions to use in continuing the lesson?</i> <p><i>You need to re-visit the Learning Target and Success Criteria here!</i></p>	<p>Student Actions</p> <ul style="list-style-type: none"><i>How will students share their work/thinking?</i>

Lesson Component: Assessment

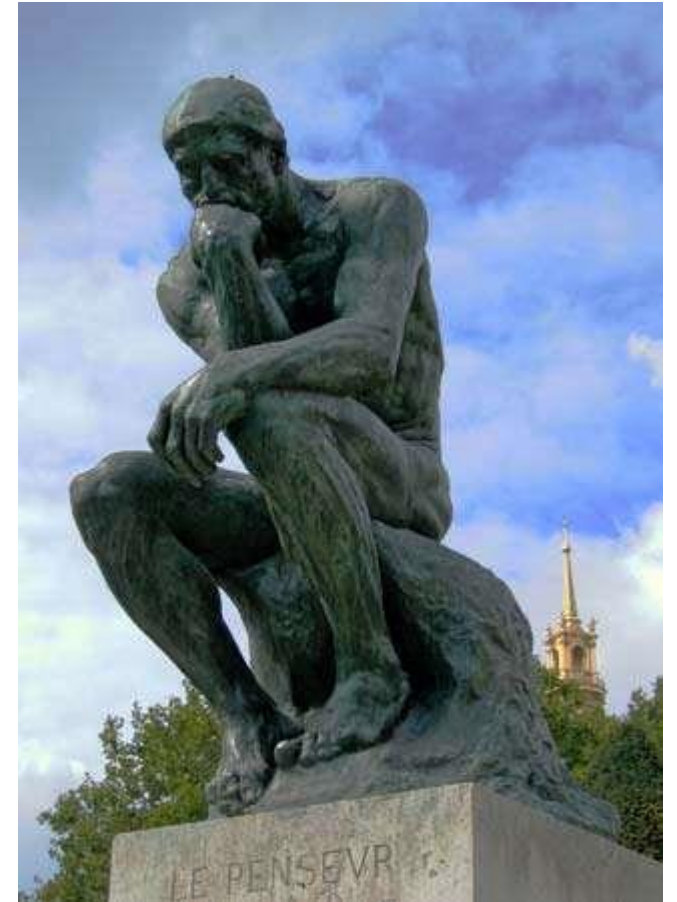
ASSESSMENT

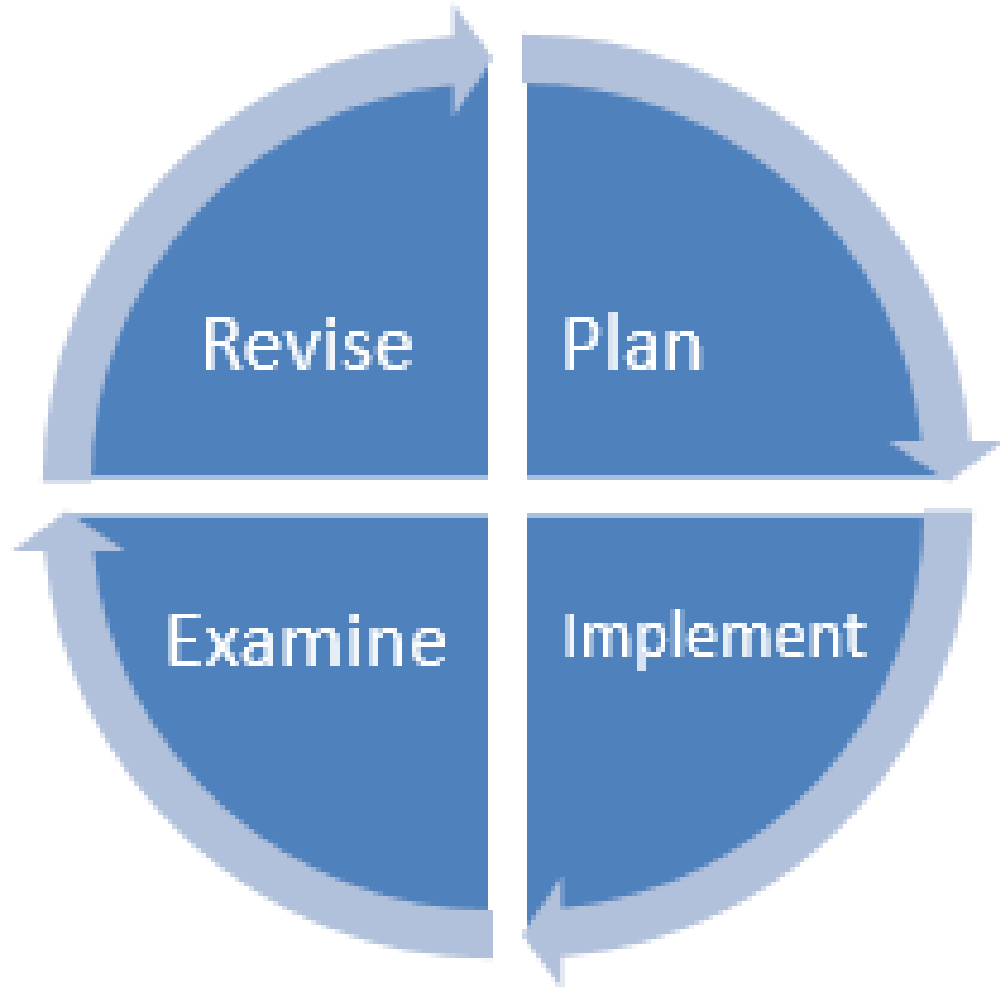
At the end of this lesson, how will you know what they know?

This should be directly connected to the Learning Target and Success Criteria!

Planning Considerations

- Consider smaller forays into lesson study, such as Number Talks
- This is usually not a linear process, expect the team to jump between sections
- Teachers may need to create supporting documents or obtain needed resources outside of planning time
- The moderator is there to help them stay on the road, not drive the bus!





Implementing
the lesson plan

In the classroom



The Action Teacher will teach the team-developed lesson to his/her class while the rest of the team observes and records data

- Usual supports for students are in place
- Does the teacher have any power to deviate from the plan?
- What if the teacher doesn't follow the plan?

Reserve time to set expectations

- Teachers are not usually trained observers
- How to act in the classroom
- Focusing on the student learning
- How to take observational notes
- Focusing on a few students for the entire lesson works well

Date:

Observer:

Class observed:

Lesson Study: Observation

Observation Guidelines:

- Avoid side conversations
- Be careful not to block a student's view
- Circulate freely when students are working individually or in groups, but move to the side or back during whole-class instruction
- Refrain from teaching or assisting the students in any way. You are there as an observer/researcher.
- Record student actions/conversations/strategies/solutions throughout the lesson

Data Collection:

- Record individual student responses, either using names or coded (S1, S2, S3, etc.)
- Record how students/groups begin their work and approach the task
- Record interactions between students and between students and the teacher
- Document common misunderstandings
- Indicate how individual students/groups constructed their understanding through the activities and discussions
- Document the variety of solutions that students use to solve problems, including errors

Date:

Observer:

Lesson Study: Observation

Class observed:

Cat food
Fancy Feast

Frozen pizza
stick w/ Tony's

Observation Guidelines:

- Avoid side conversations
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20 students

"cheap" inexpensive

You are going to be in charge of where you shop?

rate "two numbers comparing" - "rates have labels" unit rate

Name spot on chart. → filter A or B spot as well "everyone"

* All students recognized fliers for shopping

effective use of document camera

20 cans/\$11 but... \$11/20 cans → 20 cans/\$11 will give you

how much for \$1.00

students interested in looking for other products.

Got to work when 12 mins was mentioned.

my shirt → Girls wrote $10\text{y}/\$10$ correctly (no labels) just 1 for unit rate.

"can we switch the money and how many?"

The denominator needs to be 1 and not \$1

page
shirt

Wrote $\$1/6/2$ + 2 bags/\$6 then rate was $\$3/1\text{ bag}$.

"we should probably put the \$ first again"

black shirt, "Keeping track of time w/ iPad

Im confused "B2, B1, what the heck?"

MG 9/16

Willy (skipping around to do the "easy ones first")

"not addressing ounces"

- water not per bottle per case.

After Willy \$4 would be \$2 and the other \$1 split would be 50¢ so \$2.50 for one.

"Curtis" denominator is always 1.

need to add in how much per bottle?

Willy working cooperatively.

students know what to do but let their partners divide. "I know why, I did it wrong"

"Don't the ounces matter?" Teachable moment.

Willy (\$/can) exactly what you wrote on the board justify \$1 per can would be \$11.

Girl in Gray in front, nothing in her chart
Sent unit rate papers / not used today.

Name spot on exit ticket

One student adding up A Block and B Block - blue sweatpants
to make an informed decision

Quality of items → produce better,

\$1	3.50
1.342	2.50
4	1.50
2.55	2.
2.50	2.50
1.00	2.50

A will save you 3¢ per week

8:40 - Hook - family grocery shopping - Brief reference to LFL

Word Search - engineering tech terms

T: What is a rate?

S: 2 #s comparing each other
T: That's a ratio - rates have labels.

Yogurt
Frozen Dinner

T: How is a unit rate special?

S: "every one"

* Write name of store on paper

* Use calculators?

T: Groups of 2 w/ pre-made shopping list
Find items (puts on doc camera)
You each fill out the chart
(Shows a grocery flyer) "My man loves those"
Copy instead today

A - Fancy Feast

B - Tony's pizza

Questions so far?

T - Models pet food first 20 cans cat food / \$11
Rate or unit rate? (writes on chart)
How would we find the unit rate? $+$, $-$, $*$, or \div ?
What about a repeating decimal?

S: Tenths? dollar?

8:50

T: Assigns groups orally
Find your partner + a table to sit at
A" Flyer - use Fancy Feast

* Consider modeling estimating an answer

8:53 Students start working

Group 1 (2 girls)

Do division, compare answers
→ Stuck on pet food example
Struggling...

S: - Let's figure out all the rates, then do the other
We're trying to figure out money

9:01 S: Let's make an to yogurt.

S2 Persists -

(I couldn't help myself)

Set up division problem wrong

9:07 - Still have not moved beyond cat food

item
#

Group 2 w/ Ten
Work separately

T assists - points out the difference b/w rate or unit rate
Should be consistent

9:04 Finished →

* Need an extension?

Found rate, did unit rate

item

9:10 - T All students back to your seats → For comparison

* Shouldn't they stay w/ their partner?

→ * What happened to comparing within a store?

T calls on individual students for rates

A		B
\$1/1tn	Yogurt	\$3.50/4
* 3/pkg	Frozen Dinner	* 2.50/pkg
* 1.42/can	Tuna	* 1.50/can
* 4.00/box	Frozen Pizza	* 2.00/box
→ * .55/can	Pet Food	* .50/can
* 2.50/case	Bottled H ₂ O	* 2.50/case
* 1.00/bag	Salads	* 2.50/bag

T: How did you know just by looking at it?

T: Where is it cheaper? S; B

* S: Doesn't the ounces matter in the price?

T: by pound - meat dept. ~~steak vs chicken~~
→ Consider recording questions to come back to?
Wandering

9:20 T passes out the exit cards -

Which store would cost less money
this week - explain your reasoning

9:25 T: The A flyers
are S & S and Hamafords,
B is from Market Basket

Extension
Next, calculate
the price per ounce.

T: Without revealing your ET answer -
could you see a reason to go to the
other store anyway?

S - better quality (produce)

S - particular items

S - you just need 1 thing

T: What about the way you're treated?

T: Make sure your name is on it + pass forward

* Fancy Feast an
issue - need
to model the
money
item

* Don't put ✓
by cheaper
items - The kids
need to figure
this out!
Rigor

Time to debrief



Why use a protocol?
Because of the feedback continuum...



Debriefing Protocol

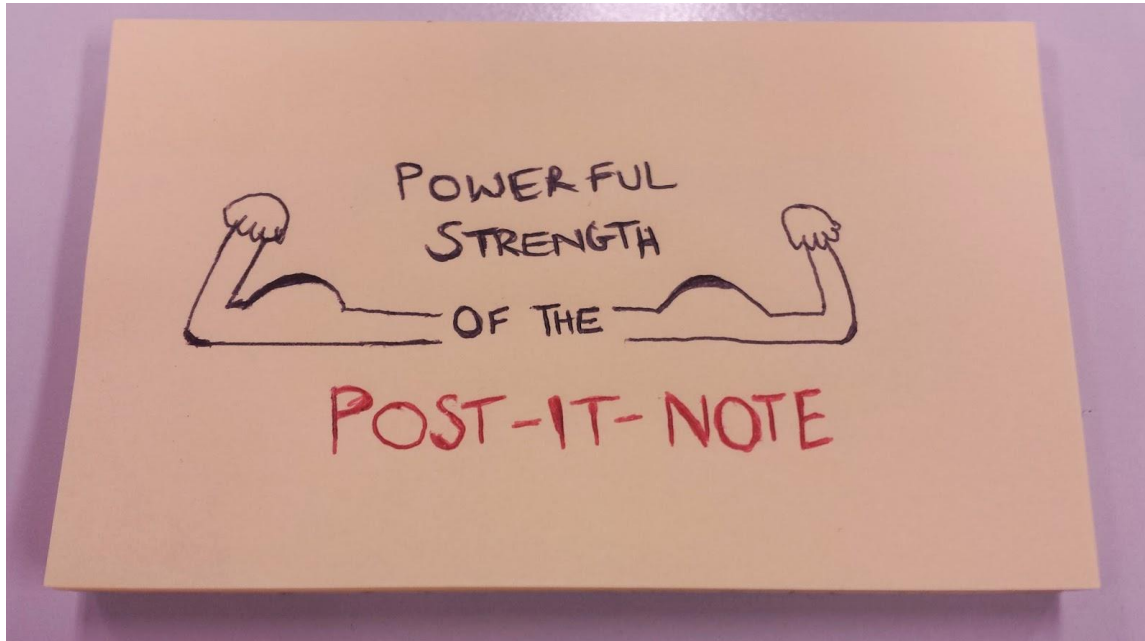


- Lasts about 30 minutes, and ideally happens right after the lesson is taught
- Team transfers data points onto sticky notes using + or Δ
- The Action Teacher sits and breathes 😊 while they do this, or may be looking through student work (exit ticket, etc.)
- The Action Teacher goes first, sharing his/her experience with the lesson from the teacher perspective
- The team works through the lesson plan by section to keep/revise elements based on the data

	+	Δ
Intro/Launch		
Task/Work Time		
Closure/Summary		
Assessment		
Other		

Role of the Moderator

- Look at the sticky notes to group common data and look for trends
- Read the data points aloud to the group
- Ask probing questions to move the conversation forward
- Help the group avoid getting stuck
- Record changes in the lesson study template (scribe)



- Novice teachers will provide input
- No one dominates the conversation
- Grounded in the data - the act of writing requires reflection
- Anonymous → more honest
- Helps to center the discussion on the feedback continuum

When the debriefing is completed...



- Will anyone else teach this same lesson? Can you find time to debrief after it as well?
- Based on this lesson, is there anything in particular you want to include in the next lesson study?

Case Studies

- School culture improved – more collaboration, a feeling of “we’ve got this”
- Improved growth mindset of teachers, about themselves and their students
- Teachers incorporated elements of lesson study into their regular planning
- Use of curriculum became more deliberate
- Student mathematics achievement improved

Mathematics is the art of explanation

If you deny students the opportunity to engage in this activity

To pose their own problems

To make their own conjectures and discoveries

To be wrong

To be creatively frustrated

To have an inspiration, and

To cobble together their own explanation and proofs

You deny them mathematics itself

Paul Lockhart

Teachers deserve this opportunity too!



Thank **you** for all the work
you do to improve the lives
of children everywhere.

Melinda Griffin

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