

Developing “Eyes to See Students”: Implementing Lesson Study at Three Oregon CCs

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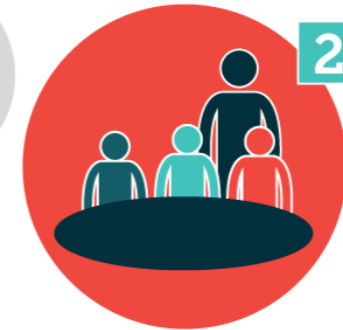
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Lesson Study

Plan

The team develops a lesson by investigating curricula and examining research. The plan includes goals, learning outcomes, anticipated student responses, instructional strategies, and evaluation questions.



Teach and Observe

One team member teaches the lesson while others observe and collect evidence of student learning.

Revise, Reteach, Reflect

Based on findings from the first teaching, the team revises and reteaches the lesson. The team reflects on the reteaching results and synthesizes lessons learned.



Debrief

The team shares observations, discusses evidence of student learning, and explores the effectiveness of the lesson.



Implementation Practices



Develop and Sustain a Collaborative Lesson Study Team



Study Research and Apply Evidence-Based Practices



Generate and Share Professional Knowledge



Plan



- What qualities do we hope to strengthen in students?
- What topics are challenging for students to learn or difficult for faculty to teach?
- What lessons cover a concept critical to the topic? What sequence will help them develop the desired understanding?



Planning Process – Establish Research Theme

- Rich discussions!
- Got us thinking about our goals in the course--beyond just a list of topics in the syllabus

Your Ideals:

Think about the aspirations that you have for your students. What kind of students do you want to foster and help develop in your course? What qualities do you want your students to have by the time they leave your community college?

Your Ideals:

Jessica:

- Students persist in the face of not knowing “the right answer.”
- Students explain their thought process, reasoning, and solutions.
- Students can articulate which pieces of their process they need help with, or where they need more information to solve the problem.

Your Ideals:

Paula:

- Literacy, because the title of the course is literacy, but also what it means. Focus on vocab and communication. Giving our students both nouns and verbs. Here's a thing, and here's a thing we do to that thing. Literacy, and vocabulary. I want to foster literate students who have the vocabulary to communicate concepts.

Your Ideals:

Margaret:

- They will gain confidence in ability to use, understand, and communicate with math. I'd like them to have perseverance and be positive-talkers. There's so much negative self-talkers. Positive speaking about math and their ability to learn math, and their ability to learn from their mistakes.

Our Goal - Three Threads Emerging

Explain / Communicate/ Articulate

- Thinking - process - reasoning - solutions
- Vocabulary
- Persistence
 - Perseverance
- Metacognition
 - Pinpoint where they need help

What we want students to be able to do:

- To be able to correctly apply a math skill to a context (and name it).
- When presented with a context, picking the right tool/lens for understanding the situation.
- Sounds like vocabulary is a component that helps students do what we want them to do.

Student characteristics:

- Communicate what they did, what they need
- Explain, communicate, articulate
- Taking a bank of experiences and seeing when to apply them in a new situation

Our Research Theme

How can we develop students' capacity to ask for clarification, communicate their thinking process, justify their solutions?

Teach and Observe



- What do the observation data reveal about student understanding and learning?



Simulation

- In small groups, designate one “**observer**” and have others be “**students.**”
- While the students discuss and work on the task, the observer takes notes on how students use the materials and the reasoning they employ during the tasks.



Simulation

Students: You will be given a physical manipulative.

Task 1: Find 20% of the fluff.

Task 2: Find 20% of the playdough.



Debrief

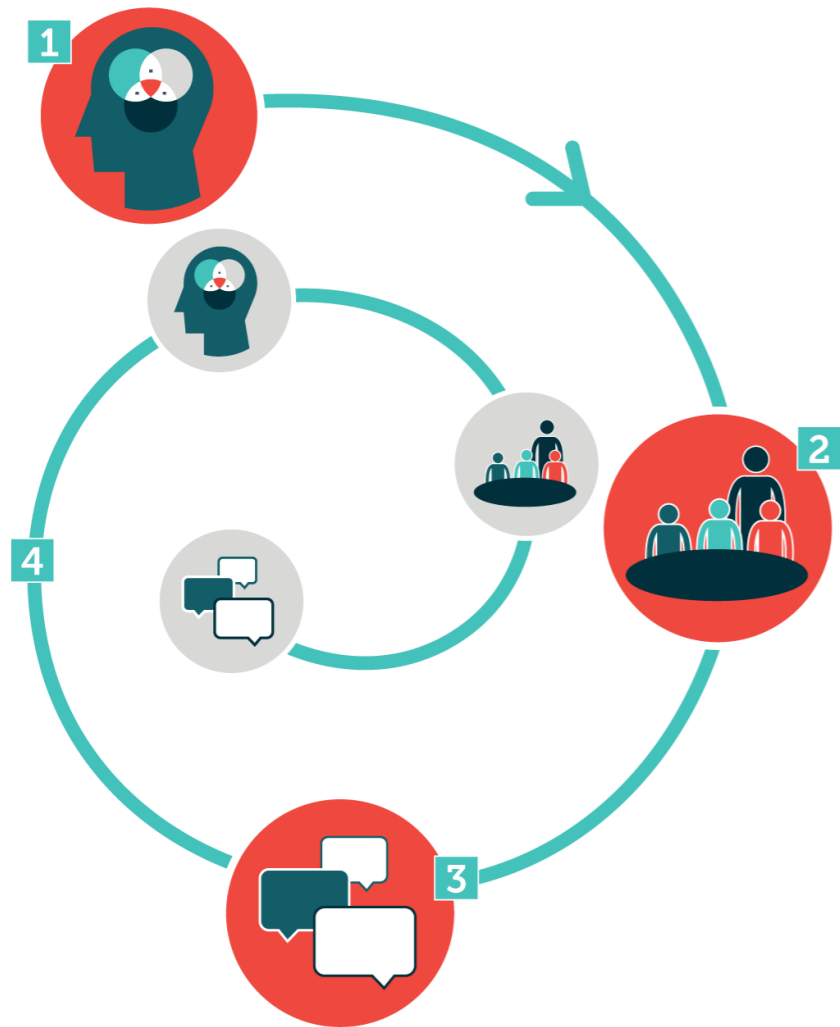


- To what extent were the goals of the lesson achieved?
- What aspects of the lesson contributed to student learning?

1. Instructor's Reflection
2. Share Observational Data
3. General Discussion
4. Final Commentary



Revise, Reteach, and Reflect



- How can the lesson help students more effectively reach the goals?
- Did the revised lesson bring about the desired changes?
- What did we learn that can be applied more broadly to our professional practice?



Revising



In our first iteration, we had no context. Here's what students really did:

- They did not all have the same manipulatives – they (rightfully) complained about the differences in the tasks.
- Starting with a “closed problem” meant they got an answer and stopped engaging with the problem
- They didn't express emotion about the problem, not even when we started talking about taxes at the end

Revising



How this informed revision process:

- We gave them all the same manipulatives (fluff) and called it income
- This was only meaningful because of the question we started with “How much of your income are you willing to part with for taxes?” (this was after a brief discussion about what taxes pay for)

Reflecting



Making small changes had a dramatic impact:

- Taxes evoke an emotional connection to the material – why wait to bring the context in?
- Asking them an open question that is essentially rooted in their own feelings about taxes draws them in - everyone can answer
- The open question promotes growth mindset

Reflecting



General lessons about how we collaborate with other faculty:

- A lesson doesn't have to be on paper, it can be performative and discourse based

Reflections on Lesson Study

Lesson Plan

- Took existing lesson
- Made it more open-ended
- Cognitive Demand

Lesson Plan

- Research Theme
- Topic
- Lesson
- Student Goals
- Student Challenges
- Student Outcomes

Lesson Plan

- A grid outlining Activities, and Points of Assessment
- Anticipated Student Responses and Instructor Support

Broader Lessons Learned



- The Impact of Observing

- Development of Collective Efficacy
 - “a group's shared belief in its conjoint capability to organize and execute the courses of action required to produce given levels of attainment” (Bandura, 1997)

- Refined Strategy: Gallery Walks

Project Goals and Next Steps

Adapting Lesson Study for Community College Mathematics

- Can a model of Lesson Study be feasibly implemented in community colleges?
- Does it show promise for improving teaching and student learning?

Look for...

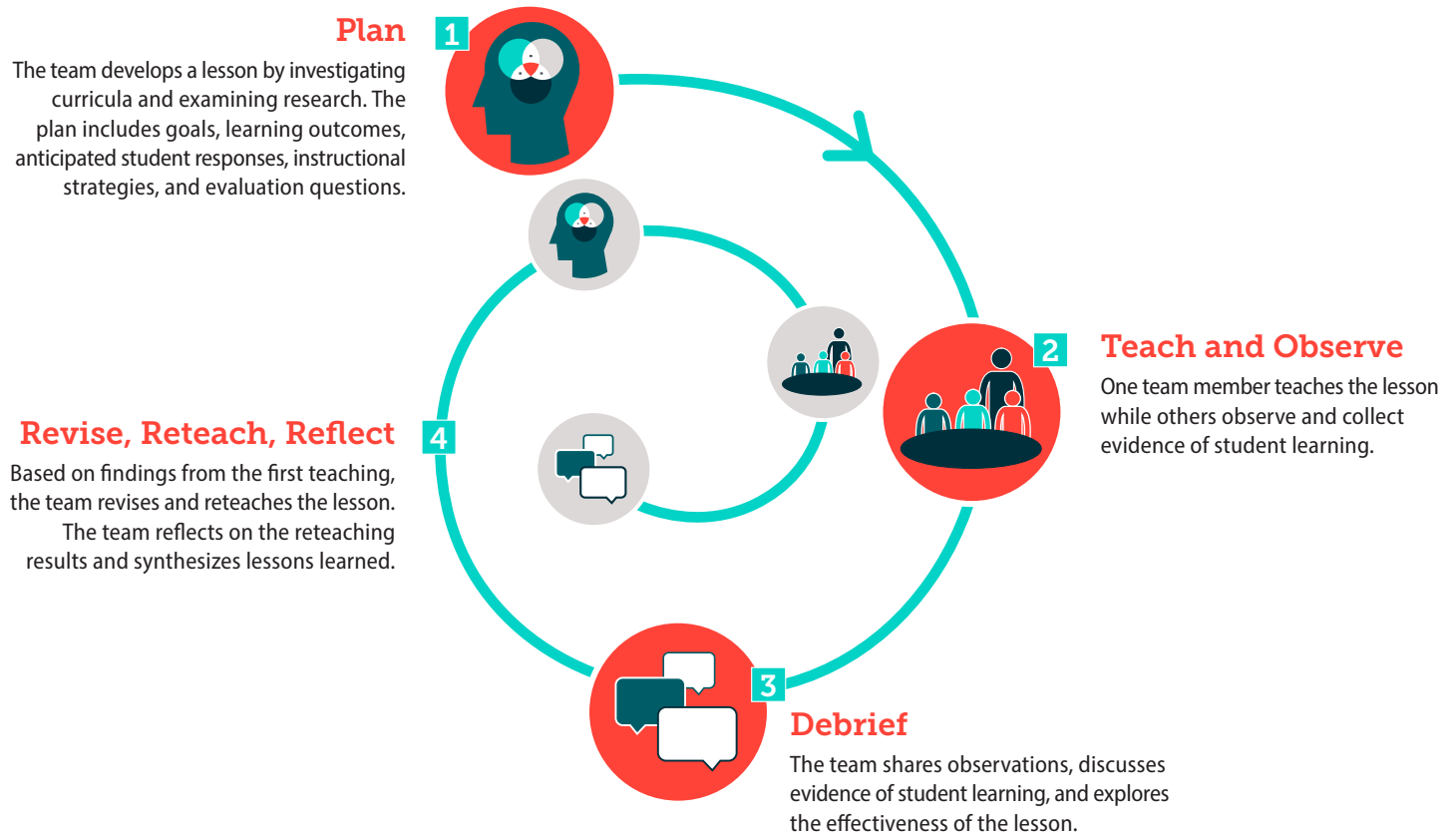
- Short paper describing Lesson Study and early lessons learned (late spring 2019)
- EdNW's facilitation guide, video, and other resources for implementation (2020)
- Final report on project outcomes (2021)
- Public lesson at a future ORMATYC??

Questions?

Lesson Study

Lesson Study is a collaborative approach to professional development focused on student learning. Teams work in iterative inquiry cycles on a problem of practice. Team members plan and teach a lesson, then observe and reflect upon the effects of instruction on student understanding. They use their observations to refine their lesson and learn more about effective practices that may result in improved student learning outcomes. Attention to key implementation practices help teams sustain their collaboration, maintain a focus on student learning, study research and apply evidence-based practices, and share lessons learned.

Lesson Study Cycle



Implementation Practices



DEVELOP AND SUSTAIN A COLLABORATIVE LESSON STUDY TEAM

- Establish purpose and long-team goals
- Articulate and attend to collaboration norms
- Maintain an inquiry focus on student learning



STUDY RESEARCH AND APPLY EVIDENCE-BASED PRACTICES

- Explore research literature on student development of mathematical understanding
- Investigate instructional approaches aligned with evidence-based practices



GENERATE AND SHARE PROFESSIONAL KNOWLEDGE

- Synthesize and document lessons learned
- Consider broader application for teaching practice
- Share knowledge with the field

Adapting Lesson Study for Community College Mathematics Instruction

ORMATYC, May 2019

The Community College Research Center (CCRC) and Education Northwest (EDNW) are working with mathematics faculty at three Oregon community colleges to adapt and pilot the Lesson Study model of professional development for use among developmental mathematics instructors. Teams of part-time and full-time faculty at Clackamas Community College, Lane Community College, and Portland Community College are participating in the project. A primary goal of this project is to understand if and how Lesson Study can be a feasible and sustainable model for faculty development in community college mathematics departments.

Lesson Study is a structured, collaborative professional development intervention that has shown evidence of improving mathematics instruction among K-12 teachers. Lesson Study gives instructors a framework for actively investigating how to improve learning in their classrooms. The model is typically implemented in an iterative cycle that includes focused observation of teaching, data collection on student learning, and refinement of instructional strategies. Despite a lengthy history of use internationally and in elementary and secondary schools in the United States, Lesson Study has rarely been implemented in higher education. For more information, see the Lesson Study framework on the reverse.

Funding for this project is provided by the Institute of Education Sciences.

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