

# Lesson Study

Professional Development for  
Community College Math Faculty to  
Support Student Learning

March 5, 2020

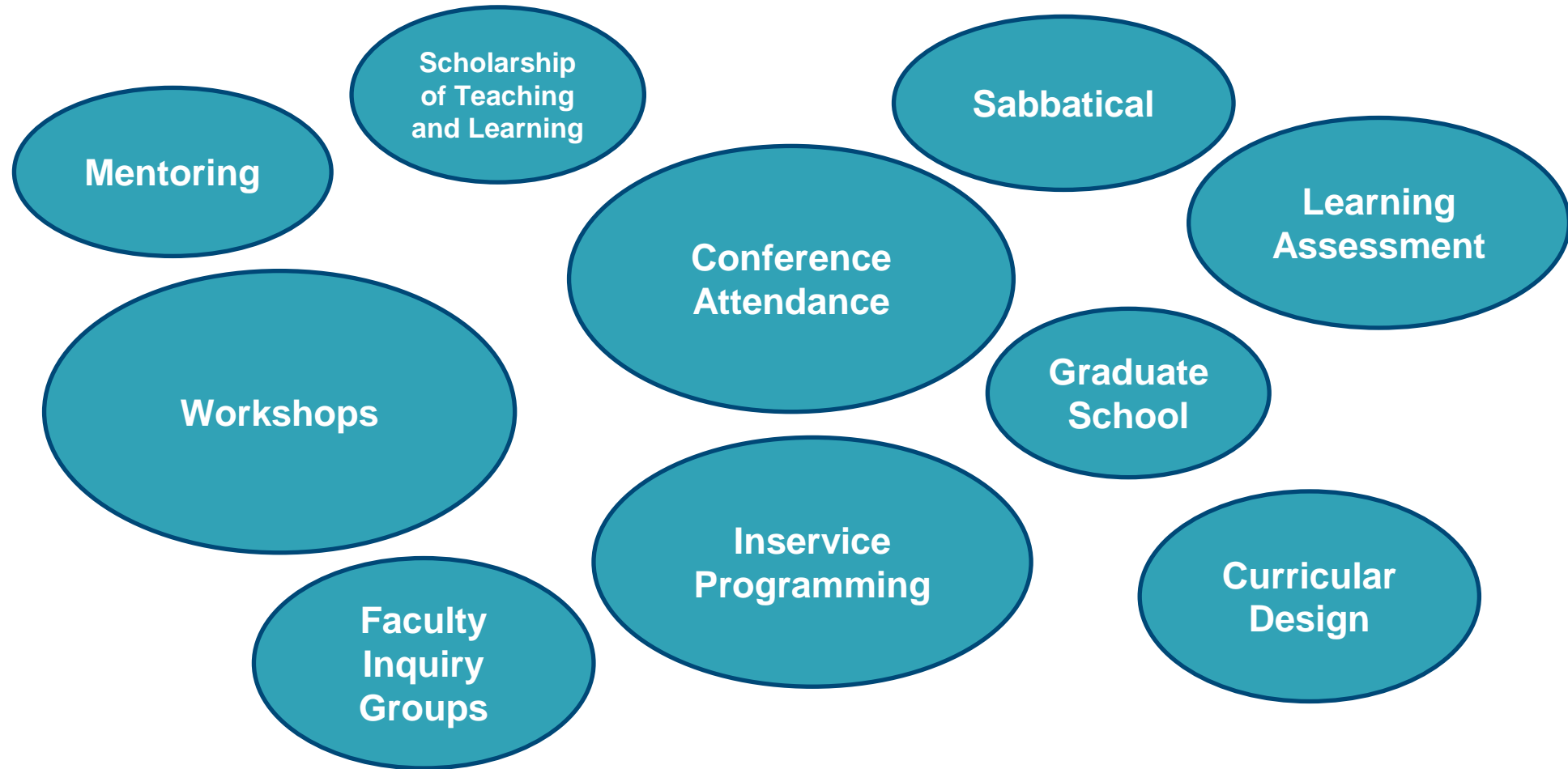
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# What professional development opportunities are available to you?



## Professional learning opportunities for math faculty at three community colleges

|  | Full-time | Part-time |
|--|-----------|-----------|
| More than five hours of PD on any topic in the past year                       | 91%       | 48%       |
| More than five hours of PD focused on mathematics instruction in the past year | 55%       | 34%       |
| Observe others teaching at least once each year                                | 50%       | 11%       |
| Received feedback on teaching from colleagues in the past year                 | 37%       | 56%       |

# Features of professional learning experiences that support instructional improvement

- Focused on specific student learning outcomes
- Provide opportunities for reflective practice
- Collaborative and sustained

# Adapting Lesson Study Project

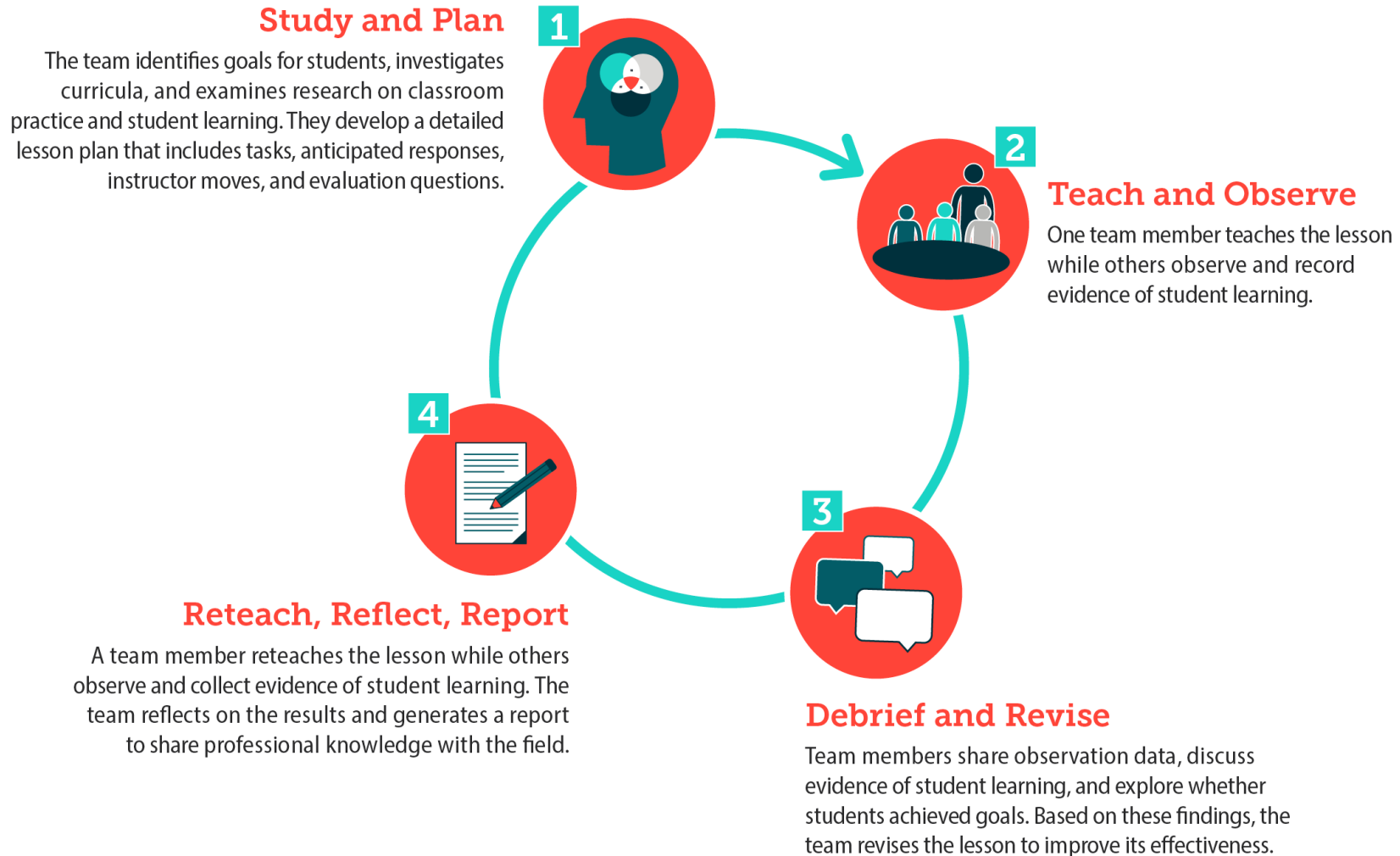
- Three community college teams participate in four cycles of Lesson Study with support from experts at Education Northwest
- CCRC researches feasibility and faculty experiences and collects formative data on student learning and outcomes



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What is lesson study?

# Lesson Study Cycle





| Ten Steps to Lesson Study               | Time       |
|---|------------|
| <b>Study and Plan</b>                   |            |
| 1. Develop collaboration norms*         | 30 minutes |
| 2. Establish a research theme*          | 1 hour     |
| 3. Identify and study the topic         | 2 hours    |
| 4. Plan the lesson                      | 3-6 hours  |
| <b>Teach and Observe</b>                |            |
| 5. Prepare to teach and observe         | 1 hour     |
| 6. Teach and observe the lesson         | 1-2 hours  |
| <b>Debrief and Revise</b>               |            |
| 7. Debrief and discuss observation data | 1 hour     |
| 8. Revise the lesson                    | 1-3 hours  |
| <b>Reteach, Reflect, Report</b>         |            |
| 9. Reteach, observe, and debrief        | 2 hours    |
| 10. Reflect and report                  | 1 hour     |

# Implementation Practices



## **DEVELOP AND SUSTAIN A COLLABORATIVE TEAM**

- Establish purpose and long-term 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 evidence-based instructional approaches and practices



## **GENERATE AND SHARE PROFESSIONAL KNOWLEDGE**

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

# Lesson Study in Action

# Research Theme: Think & Share



What are your long-term goals for students?



What ideally, do you want for your students?



What does that look like?

# Research Theme: Three College Teams

*How do students develop and recognize their willingness to engage with mathematics?*

- Curiosity
- Persistence
- Confidence

*How do we build students' confidence in their mathematical reasoning and willingness to persevere in problem solving?*

- Promote a productive disposition
- Support a growth mindset
- Embrace and learn from confusion

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

# Research and Evidence: Think & Share

- How have you used research literature on student learning and development?
- To what extent has it changed your instructional approach and practices?
- What remains challenging?

# Research and Evidence: College Teams

- What is quantitative literacy?
- What are our teaching and student learning challenges?
- Which instructional practices help students develop quantitative literacy and equitable access to learning?

# Lesson Goal for Students

- Explore, recognize, and make sense of the role that weights play in estimating an average



# In what ways is this task group-worthy? Where could it improve?

In a city with three high schools, all the ninth graders took a standardized test, with these results:

| High School  | Mean test score | # of ninth graders |
|--------------|-----------------|--------------------|
| Glenwood     | 79              | 286                |
| Central City | 96              | 315                |
| Lincoln High | 68              | 156                |

The city's PR manager claimed the mean score of all ninth graders in the city was 81 (because the average of 79, 96, and 68 is 81). Of course, that is incorrect. Write a sentence or two to explain why this approach is incorrect.

What's the *correct* mean score for all ninth graders in the city? Round to one decimal place.

mean of all ninth graders' scores =

Now you try it!

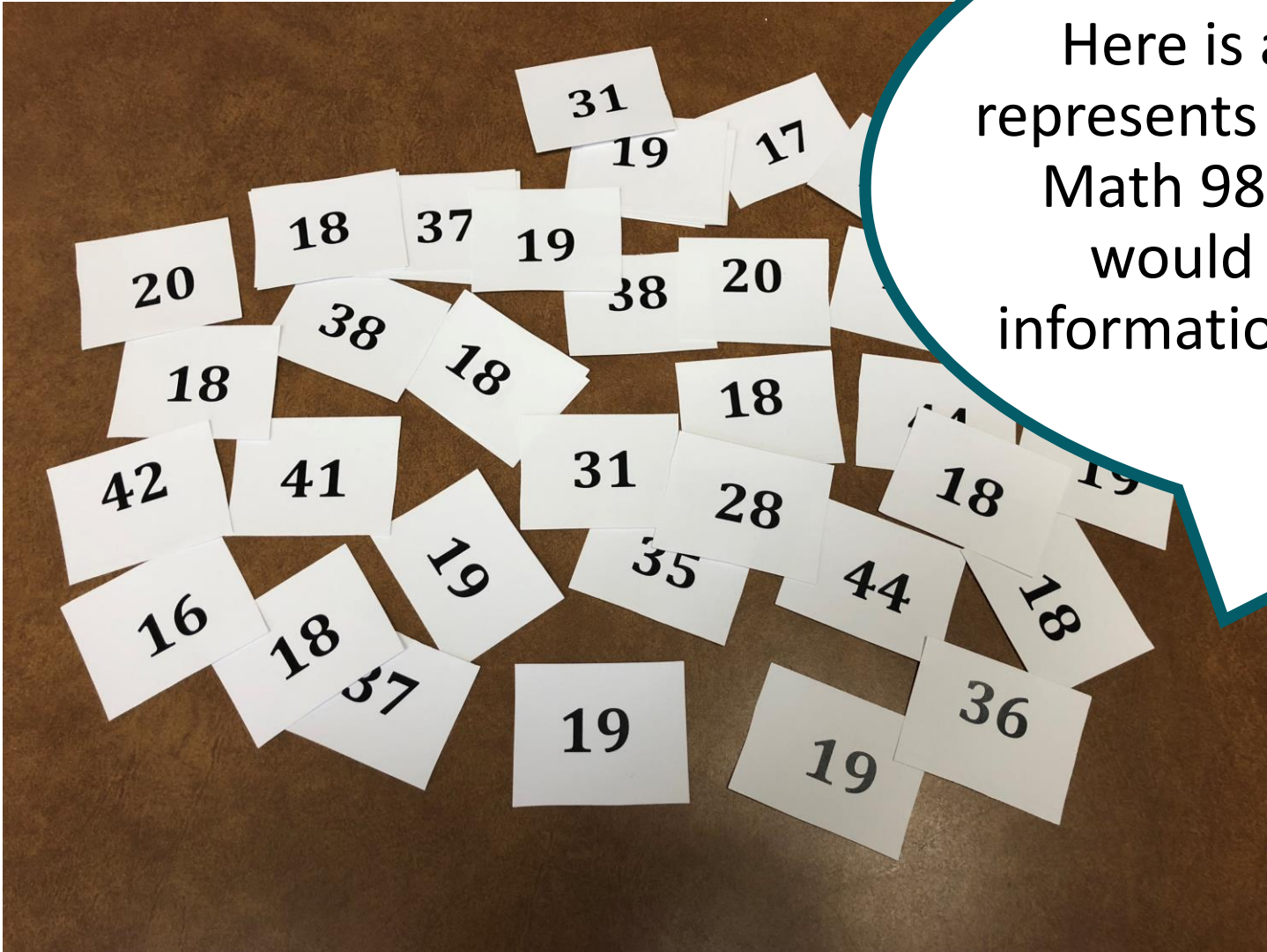
# Lesson Study Simulation

- In groups of four, designate one “observer” and others as “students.”
- While students discuss and work on the task, the observer takes notes on how students use the materials and the reasoning they employ.

What do you think is the average age of a student taking Math 98 here at Clackamas? Why would we want to know?

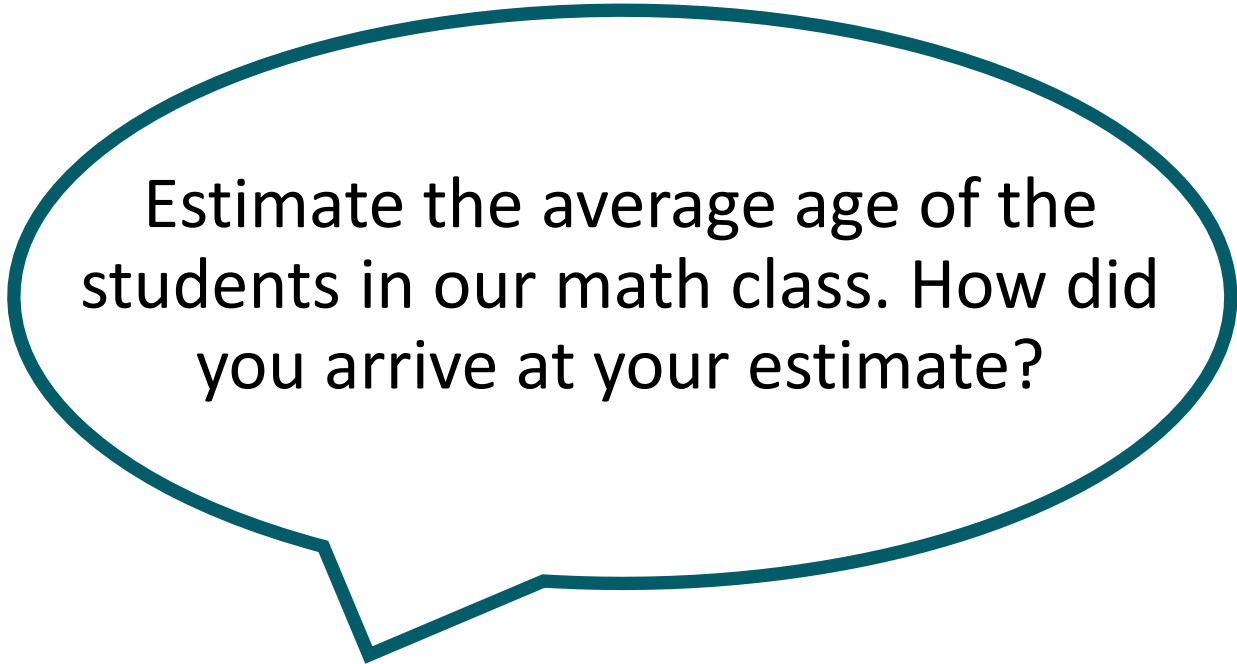






Here is a set of cards, each card represents the age of a student taking Math 98 here at Clackamas. How would you use this additional information to estimate an average?

| Age | Percent of Students |
|-----|---------------------|
| 16  | 2%                  |
| 17  | 2%                  |
| 18  | 32%                 |
| 19  | 26%                 |
| 20  | 6%                  |
| 28  | 2%                  |
| 31  | 4%                  |
| 35  | 4%                  |
| 36  | 2%                  |
| 37  | 6%                  |
| 38  | 4%                  |
| 41  | 2%                  |
| 42  | 4%                  |
| 44  | 4%                  |



Estimate the average age of the students in our math class. How did you arrive at your estimate?

# Debrief the Lesson

- First, share observational data without opinion or commentary
- Then reflect on to what extent the goals of the lesson were met and ideas for strengthening the lesson

Can lesson study be feasibly  
implemented in community  
colleges?



## Challenges

- Perceptions of “what counts” as professional development
- Norms of independence, competitiveness, autonomy, and privacy
- Priority of subject area expertise
- Lack of common language to discuss teaching

## Benefits

- Structure of Lesson Study helps to develop that *language* to discuss teaching
- Frameworks and protocols create safety and inclusivity
- These conversations lead to discussions of *purpose* and *value* of content and pedagogy - Issues that are particularly critical for math instructors to explore!

# Questions



# Thank You!

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