



The College STEM Reading Apprenticeship Classroom

Theresa Martin's Sabbatical Project Spring 2023

Presented to CSM Academic Senate

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Reading Apprenticeship Framework



Reading Apprenticeship Community of Practice (CoP)

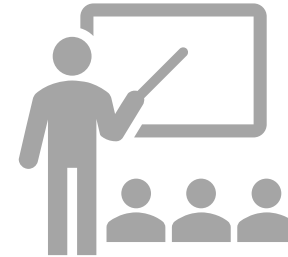


Program Scope:

Nationwide K- 16 professional development through WestEd

Adopted by California Community College Success Network

Most recently collaborations between CC and CSU through California Learning Lab grant



Program Impact:

Equity in STEM through deeper learning and metacognitive conversation.

Reshaping practitioners' understanding of text's role in learning.

Nurturing students' confidence and proficiency in STEM disciplines.

Inquiry Question:

Observing STEM Learning Community's classrooms

What observing texts, tasks and talk can tell us about how a community of practice can transform undergraduate STEM instruction



Observation Protocol

- Pre-Observation Conference
- Observation
- Post-Observation Debrief

From *Leading for Literacy: A Reading Apprenticeship Approach*,
 by Ruth Schoenbach, Cynthia Greenleaf, Lynn
 Murphy. Copyright © 2016 by WestEd.

Observers ask and the teacher being observed answers clarifying questions — giving actual questions to better understand what was observed. Observers must be careful not to ask questions that are or may be interpreted as thinly veiled criticisms. (5 minutes)

3. Observers provide specific, detailed information related to the framing question. The teacher who was observed takes notes silently. (5 minutes)
4. The teacher who was observed presents his or her impression of the lesson in relation to the framing question and has the option of opening comments beyond the framing question. These comments must focus on positive feedback and clarifying or probing questions. (5 minutes)
5. All team members refer to “What Does a Reading Apprenticeship Classroom Look Like” while discussing evidence of Reading Apprenticeship practices and routines in the observed classroom. (5 minutes)

The team reflects on the observation process:

- How could you take back from this observation and use?
- How did you do well about the protocol process?
- How could you do differently next time to improve the process?

When colleagues watch them teach, an observation protocol makes the process clear for everyone. The teacher being observed sets the parameters of what they would be watching for, and observers have a clear structure within which to

Procedure

75 minutes

Pre-Observation Conference

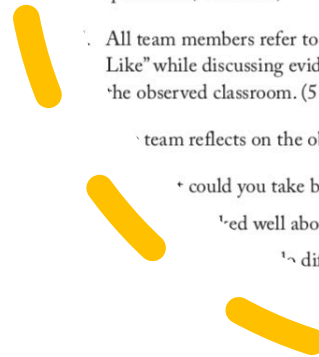
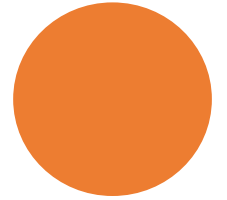
20 minutes

In Advance: The teacher being observed prepares copies of the following information for each observing teacher.

1. The teacher being observed goes over the following information with observers:
 - Grade level and course, and in general what observers can expect to see during the lesson
 - Content goals for the lesson
 - Reading Apprenticeship goals
 - Anything unusual or special circumstances observers should be prepared to see
 - Framing question the teacher being observed would like observers to focus on, notice
2. Observers ask any clarifying questions.
3. Team members review “What Does a Reading Apprenticeship Classroom Look Like.”

During the Observation

30 minutes



Observation Goals

How instructors incorporated reading or texts into the learning session

Alignment with “What a Reading Apprenticeship Classroom Looks Like”

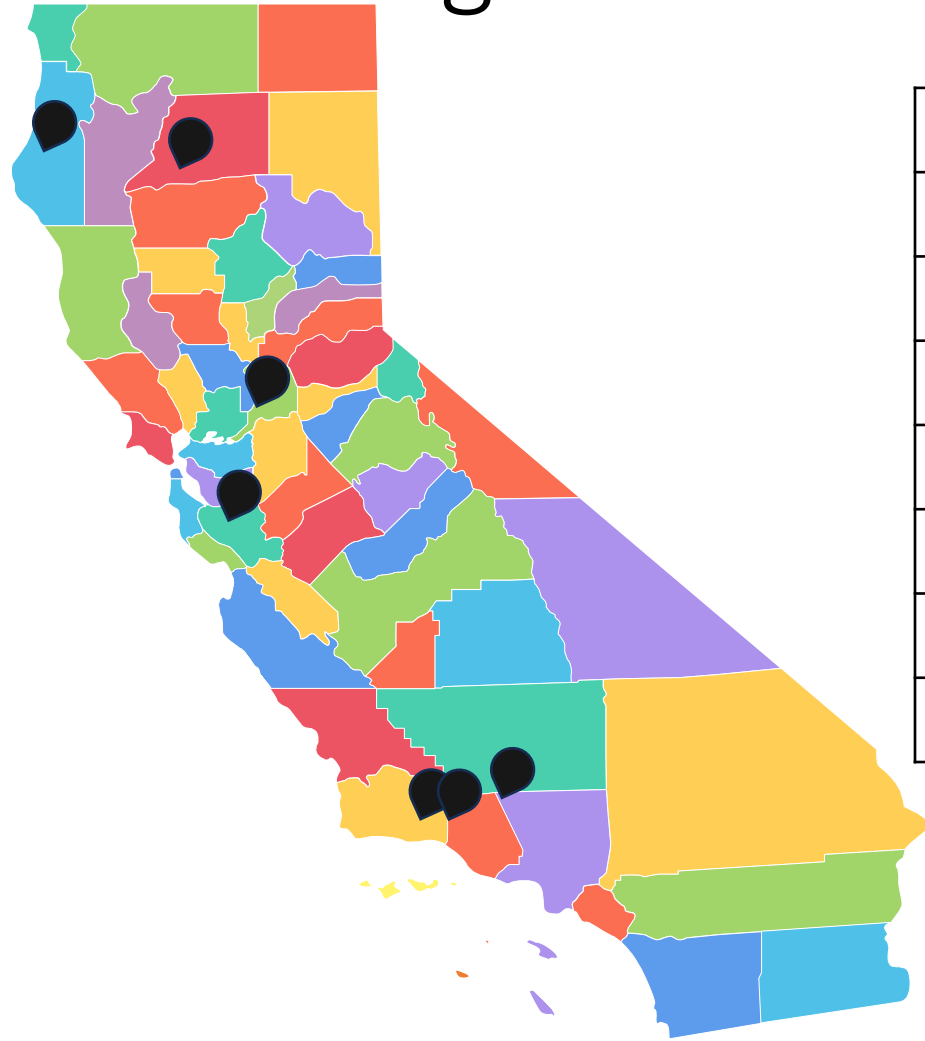
Instructor practices that supported metacognition

Student talk and/or moves that showed they were being metacognitive and considering ways of knowing in addition to learning the content of the lesson

Evidence of collaboration

Classroom dynamics that showed shared power of disciplinary content and disciplinary literacy

College Locations and Disciplines



College	Discipline
American River College	Chemistry
Cal State Long Beach	Math Education
Long Beach City College	Biology
Cal State San Bernardino	Environmental Science
College of the Redwoods	Math
San Jose State	Computer Science
Shasta College	Math



Findings: Incorporating Reading in STEM Classes

Textbook Usage in STEM:

- CoP instructors assigned reading and had structured activities around those readings

Examples of Effective Practices:

- Use of short sections of textbook readings with scaffolded inquiry prompts.
- Emphasis on collaborative student engagement with texts.
- Integration of texts to develop critical thinking and problem-solving skills.

Findings: Supporting Student Comprehension of STEM Texts

Scaffolding Literacy Skills:

- Instructors had explicit goals for addressing students' literacy skills.
- Scaffolded support provided for reading responsibilities.
- Activities in class supported students' comprehension of texts.

Examples of Effective Strategies:

- Modeling problem-solving strategies through Think Aloud routines.
- Utilizing metacognitive notetakers and discussions.
- Customizing prompts and activities to the content being studied.



Student Inquiry into Texts

Examples of Student Collaborations

- “I was thinking it was like...”,
- “remember what we did last time”
- “I think she said solve for K first”
- “I’m confused”
- “Are you saying...?”

- “Yeah, it's on page 17”
- “Oh so internal means...”

- “I don’t know what that word is... dioecious, hmm”

Instructor Prompts

Examples of Instructor’s Scaffolds

- “How do you determine how many valence electrons each family has?”
- “Tell me what’s happening when...”

- “Where are your thoughts on this?”

- “When you drew this line, how did you do it?”

- “How did you find the height? (for the area of a triangle)”.

- “So when you don't know what something

is, how do you go about figuring out what it

Findings: Promoting Collaboration and Equity


Cultivating Collaboration:

- Creating safe environments for sharing and collaboration.
- Encouraging active student engagement through structured paired work and group activities.
- Promoting respect for diverse perspectives and contributions.

Fostering Equity:

- Pairing students for equal participation.
- Valuing and respecting all contributions.
- Empowering students to take the lead in their learning.





Key Conclusions from Classroom Observations

1. Professional development in long term communities of practice supports teacher efforts to transform their teaching
2. The Reading Apprenticeship Framework and professional development is adaptable to diverse disciplines
3. Change in the STEM classroom is hard

Insights into Transforming Instructional Practices

Embracing Social and Personal Dimensions:

- Reading Apprenticeship emphasizes the influence of social and personal dimensions on learning.
- Instructors redefined their roles, prioritizing collaboration and nurturing students' science identity.

Supportive Learning Communities:

- Success of faculty demonstrates the importance of collaborative learning communities and reflective practices.
- Non-evaluative peer observations served as crucial support mechanisms for implementing innovative teaching methods.



Learn more when our book comes out in October 2024.

- <https://rowman.com/ISBN/9781538198162/Breakthroughs-in-College-Reading-The-Promises-and-Tensions-of-Disciplinary-Reading-Apprenticeships>

For more information about Reading Apprenticeship, go to WestEd.org





Thank You!

Thanks to the Professional Development
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work.