WELCOME!

Developing Teacher Leaders Through Video Analysis

As you find a place to sit, please read the quotes on the table and prepare to discuss the following with your table group partners:

In what ways do these quotes connect to your thoughts, wonderings and/or experiences related to teacher leaders and their roles to facilitate student and adult learning through video analysis?
Developing Teacher Leaders Through Video analysis

Sharing today:
Claudette Pantney, *Teacher Leader*, Pomona Unified School District
Robyn Stankiewicz, *Teacher Leader*, Minnesota Charter School
Nicole Wickler, CEMaST Research Director, California State Polytechnic University, Pomona
Goal for Today’s Session

- Explore how Teacher Leaders support colleagues in deepening their understanding and pedagogy of science ideas through video-based analysis of practice.
Today’s Agenda

- Understand Context and Selected Components of the RESPeCT Professional Development Program
- Review Teacher and Student Science Learning Results
- Engage in Video Analysis Protocol Experiences with Teacher Leaders
- Explore Tools/Protocols to Facilitate Conversations About Student Learning
- Summary and Reflections
RESPeCT Norms for Working Together

The Basics:
1. Stay for the duration
2. Remain attentive, thoughtful, and respectful
3. Eliminate interruptions (turn off cell phones, email)
4. Make room for participation from all (monitor your floor time)

The Heart of Lesson Analysis:
5. Keep the goal in mind: We are analyzing teaching to improve student learning
6. Share your ideas, uncertainties, confusions, disagreements, questions—open up time so this can happen!
7. Expect and ask questions to deepen everyone’s learning—honor needs!
Science Teachers Learning from Lesson Analysis (STeLLA)

• A year-long video-based analysis-of-practice professional development program
STeLLA Conceptual Framework

Student Thinking

8 teaching strategies that reveal, support, and challenge student thinking

Science Content Storyline

10 teaching strategies to help students connect ideas and evidence to construct coherent understandings
STeLLA Teacher Learning Experiences: Lesson Video Analysis

STeLLA Conceptual Framework

STeLLA Conceptual Framework allows you to learn and use strategies for more effective science teaching.

**Science Teaching**

**Strategies to Reveal, Support, and Challenge Student Thinking**

1. Ask questions to elicit student ideas and predictions.
2. Ask questions to probe student ideas and predictions.
3. Ask questions to challenge student thinking.
4. Engage students in analyzing and interpreting data and observations.
5. Engage students in constructing explanations and arguments.
6. Engage students in using and applying new science ideas in a variety of ways and contexts.
7. Engage students in making connections by synthesizing and summarizing key science ideas.
8. Engage students in communicating in scientific ways.

**Strategies to Create a Coherent Science Content Storyline**

A. Identify one main learning goal.
B. Set the purpose with a focus question or goal statement.
C. Select activities that are matched to the learning goal.
D. Select content representations and models matched to the learning goal and engage students in their use.
E. Sequence key science ideas and activities appropriately.
F. Make explicit links between science ideas and activities.
G. Link science ideas to other science ideas.
H. Highlight key science ideas and focus question throughout.
I. Summarize key science ideas.

**Observation**

Make an observation, question, or judgment.

**Focus on Student Thinking & Science Content Storyline**

Consider alternative explanations and teaching strategies.

**Alternatives**

**Claim**

Turn your observation, question, or judgment into a claim.

**Evidence and Reasoning**

Provide specific evidence and reasoning to support or develop the claim.
STeLLA Teacher Learning Experiences: Science Content Deepening in Three Contexts
STeLLA Professional Development (PD) Program Structure

One Year
(88.5 hours of PD)

Two-week Summer Institute
Monthly Academic Year Study Group Meetings

Teachers meet in small study groups with a PD Leader
Reinvigorating Elementary Science through Partnerships with California Teachers (RESPeCT)

• Enact high quality, rigorous, video-based analysis-of-practice professional development

• Develop Teacher Leaders for long-term sustainability

• Engage university science and math faculty to learn more about Title 1, K-6 context
STeLLA Teacher Leader Development

Year 1: Participate in PD

Year 2: Learn to Lead PD

Year 3: Lead the PD
Research Question 1: Teacher Learning

How does teacher science learning compare when participants received:

- STeLLA PD from experienced PD leaders,
- STeLLA PD from Teacher Leaders,
- or “Business as Usual” PD from the District for the comparison group?
Effect on *Teachers’ Science Learning* (End of PD Program)

Pretest and Posttest 1 (one year later) means for teacher leaders (TL), peers (PT), and comparison teachers (CT).

Error bars = +/- 1 standard error.
Research Question 2: Student Learning

- How did *students* of Teacher Leaders, Peer Teachers, and Comparison Group Teachers perform?
Effect on **Students’** Science Learning (Grades 1-6, End of PD Program)

EFFECT SIZE (vs Comparison) ~0.8

Percent Correct

<table>
<thead>
<tr>
<th></th>
<th>TL</th>
<th>PT</th>
<th>CT</th>
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</thead>
<tbody>
<tr>
<td>Pre</td>
<td>30</td>
<td>40</td>
<td>45</td>
</tr>
<tr>
<td>Post</td>
<td>50</td>
<td>60</td>
<td>58</td>
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</tbody>
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Significance levels: ****
Student Learning

- Student learning outcomes for RESPeCT students is positive and has an effect size of \(\sim 0.83\)
- What does this mean? On a normed achievement test, student averages would be 30% higher (80% compared to 50% for control)
Research Question 3: Teacher Learning Over Time

• What are the differences in mean science scores (percent correct) for teacher leaders in their first, second, and third years in the program compared to the scores of comparison teachers?
Effect on *Teacher* learning of content over time *(End of PD Program)*

<table>
<thead>
<tr>
<th></th>
<th>Pretest</th>
<th>End Year 1</th>
<th>End Year 2</th>
<th>End Year 3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ES</strong></td>
<td>1.18</td>
<td>1.31</td>
<td>1.36</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.82 adj)</td>
<td>(0.95 adj)</td>
<td>(1.00 adj)</td>
<td></td>
</tr>
</tbody>
</table>

Pretest and posttest means for teacher leaders and comparison teachers. Error bars = +/- 1 standard error.
Student Population Demographics

- 81% Free and Reduced Lunch
- 85% Hispanic, 5% African-American, 4% White, 4% Asian
- 91% STEM Minoritized students
- 49.4% Female
- 30% English Learners
Research Question 4: **Student Learning Over Time**

- What are the differences in pre-post science content scores for students of Teacher Leaders across the 3-year period?
Effect on students’ science learning (Grades 2-6, End of program)

Mean Gains (Pre to Post Spring)

Percent

<table>
<thead>
<tr>
<th>Year</th>
<th>Mean Gains</th>
<th>ES</th>
</tr>
</thead>
<tbody>
<tr>
<td>CT (Year 3)</td>
<td>5</td>
<td>n.s.</td>
</tr>
<tr>
<td>Year 1 (A)</td>
<td>20</td>
<td>**</td>
</tr>
<tr>
<td>Year 2 (B)</td>
<td>25</td>
<td>0.09</td>
</tr>
<tr>
<td>Year 3 (C)</td>
<td>25</td>
<td>0.20</td>
</tr>
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Summary of Results

In a Title 1 school district:

- Teacher Leaders and their students grew considerably in science content knowledge.
- Peer Teachers, trained by Teacher Leaders, showed very similar patterns of growth in science learning.
- Students of Peer Teachers showed similar growth as students of Teacher Leaders.
- Gains in their students’ learning were also sustained over the 3-year period, with some support for increasing their positive impact.
These findings support the claims that

- Teacher Leaders taught science content well to their peers.
- The Teacher Leader development program had a substantial impact on teacher and student understanding of NGSS-related science content.
Tools and Protocols

Explore various tools and resources used by teachers to plan and videotape science lessons and work in teams to engage in analysis-of-practice.
Analysis of Practice

Observe videos of Kindergarten and Fifth Grade classroom teaching and learning and use the Lesson Analysis Protocol to analyze practice.
Video Lesson Analysis

• **Identify** the lens and strategy.

• **Analyze** the video using focus questions.

• **Reflect** and **Apply**
Debrief of Lesson Analysis Process

- What can one learn through the use of the Lesson Analysis Protocol to analyze classroom video?

- To what extent are the norms important to this process?
Benefits and Challenges of Video-based Lesson Analysis

- The extent to which teacher agency is enhanced through video-based analysis of practice
- How challenges can be addressed

What worked?
What didn’t work?
Teacher Agency through Video-based Analysis of Practice

- Observe teacher and student moves during lesson and how/when students are engaged
- Determine the extent to which *challenge* and *probing* questions are asked during instruction
- Learn from missed instructional opportunities
- Calibrate use and impact of teaching and learning among peers
- Expand use of STeLLA strategies beyond science instruction into other curriculum
- Gain confidence as teachers experience continued professional growth
Identifying and Overcoming Implementation Challenges

• Time
• Access to effective equipment
• Transcribing lessons
• Teacher openness and vulnerability; trust level
• Managing children’s behavior in front of a camera
• Others?
Reflection and Session Take-Aways

Steps which are feasible and that can be used to support and hold yourself and others accountable to achieving the desired outcome.

<table>
<thead>
<tr>
<th>Description of Desired Results</th>
<th>Day 1 Action(s) to Take</th>
<th>Day 7 Action(s) To Take</th>
<th>Day 30 Action(s) to Take</th>
<th>Resources Needed</th>
</tr>
</thead>
<tbody>
<tr>
<td>What would you like to see accomplished as a result of your reflections and learning during this session?</td>
<td>What action will you take tomorrow towards your desired result?</td>
<td>What action will you take one week from today towards your desired result?</td>
<td>What action will you take one month from today towards your desired result?</td>
<td>What resources -- time, fiscal, human, etc. -- are needed to achieve your desired result?</td>
</tr>
</tbody>
</table>

Padlet Link:
https://padlet.com/homebake52/d6kqa6hymcpn
Questions? Comments?
THANK YOU!

Learning Forward Survey link:

Link to RESPeCT Materials:

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