

PD Support Materials

Thinking Aloud

Directions for Using the Overview Slideshow

Each Instructional Strategy Guide contains an overview slideshow that sets the context for the evidence-based practices that are presented in Teach with Tech and illustrated in the Lesson in Action. It also identifies ways to differentiate instruction based on the Universal Design for Learning (UDL) principles. Discussion questions are embedded in each slideshow.

PD Goals

- ▶ To set a context for delving into Teach with Tech and the Lesson in Action
- ▶ To elicit prior knowledge and build background knowledge

PD Materials

- ▶ The slideshow within the Instructional Strategy Guide
- ▶ Discussion questions (embedded within the slideshow and provided as a handout below)

PD Activity

- ▶ Ask teachers to review the slideshow (either before or during the session)
- ▶ Elicit conversation using discussion questions
- ▶ As a follow up, share key ideas

See the PD Facilitator Guide for related activities to support ongoing professional learning.

Discussion Questions for the Thinking Aloud in Math Slideshow

DISCUSSION QUESTIONS

1. In what ways do your students struggle with thinking aloud?
2. How does the thinking aloud strategy connect with the CCSS Mathematical Practices and the UDL principles?
3. How can the thinking aloud strategy help peers learn from each other?

DISCUSSION QUESTIONS

1. What are some different ways to model or structure using the thinking aloud strategy for students?
2. What kind of supports can you give your students to help them think aloud?

DISCUSSION QUESTIONS

1. What types of models or diagrams have your students found useful?
2. Could any of these be enhanced with technology?
3. In what ways can technology support formative assessment?

Directions for Using Teach With Tech

Each Instructional Strategy Guide contains a Teach with Tech section, which presents suggestions for differentiating evidence-based practices and personalizing instruction using a range of technology tools.

PD Goals

- ▶ To examine and discuss evidence-based practices in terms of:
 - What they are and how they can be used to differentiate instruction
 - How technology tools can be integrated to further meet the needs of struggling students
- ▶ To generate additional instructional strategies based on the needs of your students and the technology tools that are available in your school

PD Materials

- ▶ Teach with Tech (which is located within the Instructional Strategy Guide). This can be:
 - Distributed as a handout
 - Projected onto a large screen
 - Viewed on laptops, tablets, and other devices
- ▶ A companion chart (below), titled ***Differentiate the Strategy***. The chart is divided into three columns:
 - The left-hand column, “Evidence-Based Practices,” is divided into three sections, one for each of the three headings of evidence-based practices.
 - The middle column, “PowerUp Suggested Strategies,” lists the strategies presented within PowerUp.
 - The right-hand column, “Differentiating Instruction with Technology,” is blank so that it can be used to record ideas brainstormed by the group of teachers in your school.

PD Activity

- ▶ Review Teach with Tech (contained within the Instructional Strategy Guide)
 - Review the strategies under each of the three evidence-based practice headings
 - Discuss how relevant they are to your students’ needs
 - Compare them with current classroom practices
 - Identify new ideas that could be implemented
 - Discuss the accompanying Quick Views
 - Explore and discuss the identified UDL Guidelines
- ▶ Introduce the companion chart titled ***Differentiate the Strategy***
 - Collaboratively (in small groups or pairs) brainstorm ideas to include in the right hand column (“Differentiating Instruction with Technology”) by:
 - Exploring possible technology tools available in the school
 - Sharing ideas
 - Identify what it would take to implement these ideas in the classroom

See the PD Facilitator Guide for related activities to support ongoing professional learning.

Differentiate the Strategy: Thinking Aloud in Math

Evidence-based Practice	PowerUp Suggested Strategies	Differentiating Instruction with Technology
Provide Clear Explanations	Explain to your students that you're as interested in how they get their answer as you are in whether the answer is correct. Tell them that you will help them work on "thinking aloud" and explaining their reasoning.	
	When you demonstrate solving problems, model the process of thinking aloud by explicitly stating what it means to explain your reasoning. Include all the decisions you make, even the very small ones (e.g., which numbers to work with and what operations to use). Employ technology to support note taking and create visualizations of the big ideas as you work to give students a clearer understanding of your thinking process.	
	Ask guiding questions to help your students focus on their reasoning, not just the solution, even when their answer is correct. Ask students to explain why they chose a process or how they made a calculation, emphasizing that the decision process is a core part of mathematical reasoning. When you highlight the process as part of thinking aloud, you help your students to flex and strengthen their reasoning skills.	
Give Students Strategies and Models	Give your students a series of prompts—questions or sentence starters—to guide them through the process of thinking aloud. Make sure you include questions that require them to justify their decisions.	
	Have students use models and diagrams to support their thinking and take notes as they go along. These visual supports can help students figure out if their thinking is faulty. The supports also provide you with a way of helping students to pinpoint where and how they have made an error in their thinking. Students can employ technology to improve their visualizations and note taking.	
	Ask students to explain their reasoning often. Prompt students to share their thinking when they get correct answers—they can get the correct answer, but for wrong reasons—as well as when they get incorrect answers. All students can benefit from hearing peers' sound, on-target reasoning, and all students can learn from peers' explanations when reasoning goes awry.	
Provide Ongoing Formative Assessment	When a student engages in thinking aloud, invite a peer to listen and comment on the content while you concentrate on the student's use of the strategy (e.g., check to make sure the student shows an understanding of why those steps were needed). With struggling students, a small group activity might work better because it will give the students a chance to hear others before sharing their thinking.	
	Thinking aloud can help your students learn how to develop a plan to solve a problem. Have students describe and justify a plan they would use to solve a problem. Then, ask them to implement the plan as they think aloud about why it is effective, where they need to make changes, and why.	
	Consider each student's needs and learning styles when you decide on the actions you will take to move students closer to the learning goals. Whatever actions you take, give students time to ask you questions, share their thinking, and respond to the feedback you provide.	

Directions for Using the Lesson in Action

Every Instructional Strategy Guide includes one or more Lessons in Action. Each lesson provides a classroom example of the relevant evidence-based practice. The example illustrates how a teacher aligns instruction with the Common Core State Standards, differentiates instruction to meet the needs of her diverse students, uses technology to personalize learning, and engages in formative assessment.

PD Goals

- ▶ To analyze the Lesson in Action and reflect on current teaching practice
- ▶ To provide teachers with a foundation for their own lesson planning

PD Materials

- ▶ The Lesson in Action you selected from the Instructional Strategy Guide, which can be:
 - Distributed as a handout
 - Projected onto a large screen
 - Viewed on laptops, tablets, and other devices
- ▶ The companion handout (titled **Scavenger Hunt**), which can also be distributed as a handout, projected onto a large screen, or viewed on devices

PD Activity

- ▶ Analyze and discuss the Lesson in Action
- ▶ Use the **Scavenger Hunt** handout to discuss how the teacher is:
 - Aligning the lesson with the Common Core State Standards
 - Employing the strategies suggested in Teach with Tech
 - Using technology to support struggling students
 - Personalizing instruction through differentiation
 - Translating UDL principles into action
- ▶ Compare the Lesson in Action with current practice in your school and classrooms
- ▶ Identify the new ideas the Lesson in Action offers for using:
 - Evidence-based practices
 - Differentiated instruction and UDL
 - Technology tools
- ▶ Use the Lesson at a Glance for lesson planning:
 - Discuss the sequence of the instructional steps: What? Why? How?
 - Discuss how the instructional steps can be used as a basis for lesson planning
 - Create a modified lesson plan to meet student needs by working individually or in collaboration

See the PD Facilitator Guide for related activities to support ongoing professional learning.

Scavenger Hunt



Within the Lesson in Action, can you find an example of how the teacher...

1. Aligns instruction to meet the Common Core State Standards?
2. Uses one of the Teach with Tech suggested practices?
3. Uses technology to support struggling students?
4. Personalizes instruction through differentiation?
5. Translates UDL principles into action?

If you can't find an example, what would you have done?