PD Support Materials

Modeling

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 Modeling in Math Slideshow

DISCUSSION QUESTIONS

1. What models have you used in your classroom for which mathematical concepts?

2. What are the advantages and disadvantages of the virtual models you have used with struggling students?

3. How could you use a model to help your struggling students make that abstract concept more concrete?

DISCUSSION QUESTIONS

1. How does modeling support the Common Core State Standards Math Practices?

2. What types of difficulties do your students have, and how can different types of models support their learning?

3. What role does the content of a lesson have in differentiating instruction?

DISCUSSION QUESTIONS

1. What do you consider when you decide which model is appropriate for a particular problem?

2. What are the advantages and disadvantages of using virtual vs. physical models?

3. What types of formative assessment have you found to be particularly useful when checking for students' understanding of models?

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, considering the available technology tools 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 headings of evidence-based practices

- 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: Modeling in Math

Evidence-based Practice	PowerUp Suggested Strategies	Differentiating Instruction with Technology
Provide Clear Explanations	As students become comfortable with a particular model, move to more abstract thinking. Ask them to explain how the model helped them to know that their answer was correct. Encourage them to answer a problem by visualizing the model, rather than using the physical manipulative. Alternatively, ask them to generalize a pattern after they have completed a few similar tasks.	
	Whenever students find a solution, make sure they connect the model to the original problem. If students have been using the language from the original problem, this should be a natural connection to make. If students refer to the model itself, rather than what it represents, ask them to explain their answer in terms of the original problem.	
	Help students to choose their own models. Point out that models remove unnecessary information, which will help them to focus on the mathematics of the problem. Guide them to choose a model that has features that fit the problem they are working on so that they can focus on the mathematics.	
Give Students Strategies and Models	Help your students to understand when it is appropriate to use a model by articulating your own thinking. For example, you might say, "If I were having difficulty seeing how this works, I would try using 10 colored discs to make a model of the situation. The colored discs would be the 10 colored cars from the problem."	
	Help your students to understand how different models can be used in different ways to illustrate a concept or solve a problem. Support them in understanding the relationship between different models, and how each model can be used to solve the same problem.	
	Facilitate multiple means of expression by introducing students to varied online tools for constructing models. For example, virtual manipulatives can be particularly valuable for students with poor fine motor skills. Determine which students would benefit from being able to touch and pick up objects, and which need computer-based manipulatives.	
Provide Ongoing Formative Assessment	Ask students to explain why they chose particular models.	
	Consider each student's needs and learning styles when you decide what actions to take to move students closer to learning goals. Whatever actions you take, give students time to ask you questions, share their thinking, and respond to the feedback you provide.	
	If a student selects an inappropriate model, ask them to explain why they chose that model. If needed, follow up by asking about the need to simplify or elaborate features, or the possibility of using other models presented by the teacher or peers.	

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?