Evaluate

Leader Notes: Reflecting and Extending

Purpose:

The Evaluate phase will assess participants' understanding of the instructional components of the professional development that address potential stumbling blocks for teaching and learning. This phase also allows participants to reflect upon the learning resulting from the professional development.

Descriptor:

Participants will view video excerpts of a student lesson from this professional development. They will note effective teaching behaviors and evidences of student learning. Participants will use their observations about the video excerpts and their learning during the professional development to discuss the implications for personal practice.

Duration:

45 minutes

TEKS:

a5 Tools for algebraic thinking. Techniques for working with functions and equations are essential in understanding underlying relationships. Students use a variety of representations (concrete, pictorial, numerical, symbolic, graphical, and verbal), tools, and technology (including, but not limited to, calculators with graphing capabilities, data collection devices, and computers) to model mathematical situations to solve meaningful problems.

a6 Underlying mathematical processes. Many processes underlie all content areas in mathematics. As they do mathematics, students continually use problem-solving, language and communication, and reasoning (justification and proof) to make connections within and outside mathematics. Students also use multiple representations, technology, applications and modeling, and numerical fluency in problem-solving contexts.

2A.10 **Rational functions.** The student formulates equations and inequalities based on rational functions, uses a variety of methods to solve them, and analyzes the solutions in terms of the situation.

2A.10A The student is expected to use quotients of polynomials to describe the graphs of rational functions, predict the effects of parameter changes, describe limitations on the domains and ranges, and examine asymptotic behavior.

2A.10B The student is expected to analyze various representations of rational functions with respect to problem situations.

2A.10C The student is expected to determine the reasonable domain and range values of rational functions, as well as interpret and determine the reasonableness of solutions to rational equations and inequalities.

2A.10G The student is expected to use functions to model and make predictions in problem situations involving direct and inverse variation.

TAKS™ Objectives:

While the Algebra II TEKS are not tested on TAKS, the concepts addressed in this lesson reinforce the understanding of the following objectives.

- Objective 1: Functional Relationships
- Objective 2: Properties and Attributes of Functions
- Objective 10: Mathematical Processes and Mathematical Tools

Materials:

Prepare in Advance: Projection system for video

Presenter Materials: DVD with video excerpts of the 5E Instructional Model

Per participant: **Watch This!**, **Debrief This!**, and **What Next?** activity pages

Leader Notes:

The purpose of this activity is to evaluate participants' growth in understanding related to the professional development. Participants should be asked to justify their statements and apply knowledge acquired in earlier phases of the training.

Evaluate

Part 1 – Reflecting on Teaching and Learning through Video Analysis (30 minutes)

1. Distribute the **Watch This!** activity page to each participant.

2. Play the excerpt from the Engage phase of the student lesson. When the screen for the Explore phase pops up pause the video for two minutes and allow participants to note observations about what the teacher is doing, what the students are doing, and what evidences of learning are heard or seen.

3. Repeat this process for each phase of the 5E Instructional Model.

4. Distribute the **Debrief This!** activity pages to each participant.

5. After the groups have answered their questions, prompt each group to share their observations and the implications of their observations with the whole group.

Debrief This!

1. **How does the teacher set the stage for the lesson?**
   Responses may vary. She shows slides of different types of cantilevers. She includes the Frank Lloyd Wright home, Fallingwater.

2. **How does the teacher relate new contexts to students' prior knowledge?**
   Responses may vary. She connects the word cantilever to a diving board.

3. **How does the teacher place the responsibility on the students for the lesson?**
   Responses may vary. Each person in a group has a responsibility during the data collection.

4. **What is the teacher doing that you might not normally see in an Algebra II classroom?**
   Responses may vary, such as facilitating rather than lecturing, asking questions, and introducing new vocabulary.

5. **What student behavior do you see in the Explore that you might not normally see in an Algebra II classroom?**
   Responses may vary, such as: working together, talking to each other, discussing mathematics, posting work on chart paper, and collecting data.

6. **How is the Evaluate different from what you might normally see in an Algebra II classroom?**
   Responses may vary, such as: card match as opposed to homework problems, students working together and discussing mathematics.

7. **How does student behavior change as the 5E lesson progresses? Why do you think it changes?**
   Responses may vary. Students become more talkative and appear more engaged. The lesson is presented so that it is related to a real world context with students collecting data and modeling their data with a function. Students discover transformations to the reciprocal parent function using their calculators as a manipulative.

Part 2 – Extending to Personal Practice (15 minutes)

1. Distribute the **What Next?** activity page to each participant.

2. Prompt participants to respond to the questions posed on the **What Next?** activity page.

3. Prompt participants to share one response within their table groups.

4. After each person has shared a response, prompt the group to determine a summary statement about their discussion.

5. Prompt each group to share its summary statement to draw closure to the professional development.

Watch This!

5E Instructional Model Phases	The teacher…	The student…	Evidence of learning…
Engage			
Explore			
Explain			
Elaborate			
Evaluate			

Debrief This!

1. How does the teacher set the stage for the lesson?

2. How does the teacher relate new contexts to students' prior knowledge?

3. How does the teacher place the responsibility on the students for the lesson?

4. What is the teacher doing that you might not normally see in an Algebra II classroom?

5. What student behavior do you see in the Explore that you might not normally see in an Algebra II classroom?

6. How is the Evaluate different from what you might normally see in an Algebra II classroom?

7. How does student behavior change as the 5E lesson progresses? Why do you think it changes?

What Next?

1. What topics comprise the next unit of instruction for your students?

2. What topics within this unit present challenges for your students as they learn? Why?

3. What opportunities for modeling exist in these challenging topics?

4. What opportunities for organizing exist in these challenging topics?

5. What opportunities for generalizing exist in these challenging topics?

6. What five questions do you want your students to be able to answer related to modeling, organizing, and generalizing within this unit?

7. How might facilitating connections among the processes of modeling, organizing, and generalizing help your students be more successful in this unit of study?