Ohio Confederation of Teacher Education Organizations

October 29, 2015

# High-Leverage Teaching Practices: What, why and how?

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# ENTRY-LEVEL TEACHING AS A CRITICAL FOCUS

- More U.S. schoolchildren have a teacher with fewer than five years of experience than a teacher with any other number of years of experience
- Most beginning teachers say they are underprepared for teaching, and on average they are less effective
- Distribution of beginning teachers is concentrated disproportionately in low-income schools and high-minority schools
- Proven power of skillful teaching

# WHAT GREAT TEACHERS OFTEN SAY ABOUT TEACHING

*"Teaching has always come naturally to me."*

*"I have learned what I do from experience; I like to pass on what I know to student teachers."*

*"I can't explain what I do –- teaching is really an art and you have to follow your intuition a lot."*

*"I have developed my way of doing things that works for me and my style."*

# OVERVIEW

① Core components of practice-focused teacher education

② High-leverage practices

③ University of Michigan teacher education program: One illustration


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# ① CORE COMPONENTS OF PRACTICE-FOCUSED TEACHER EDUCATION

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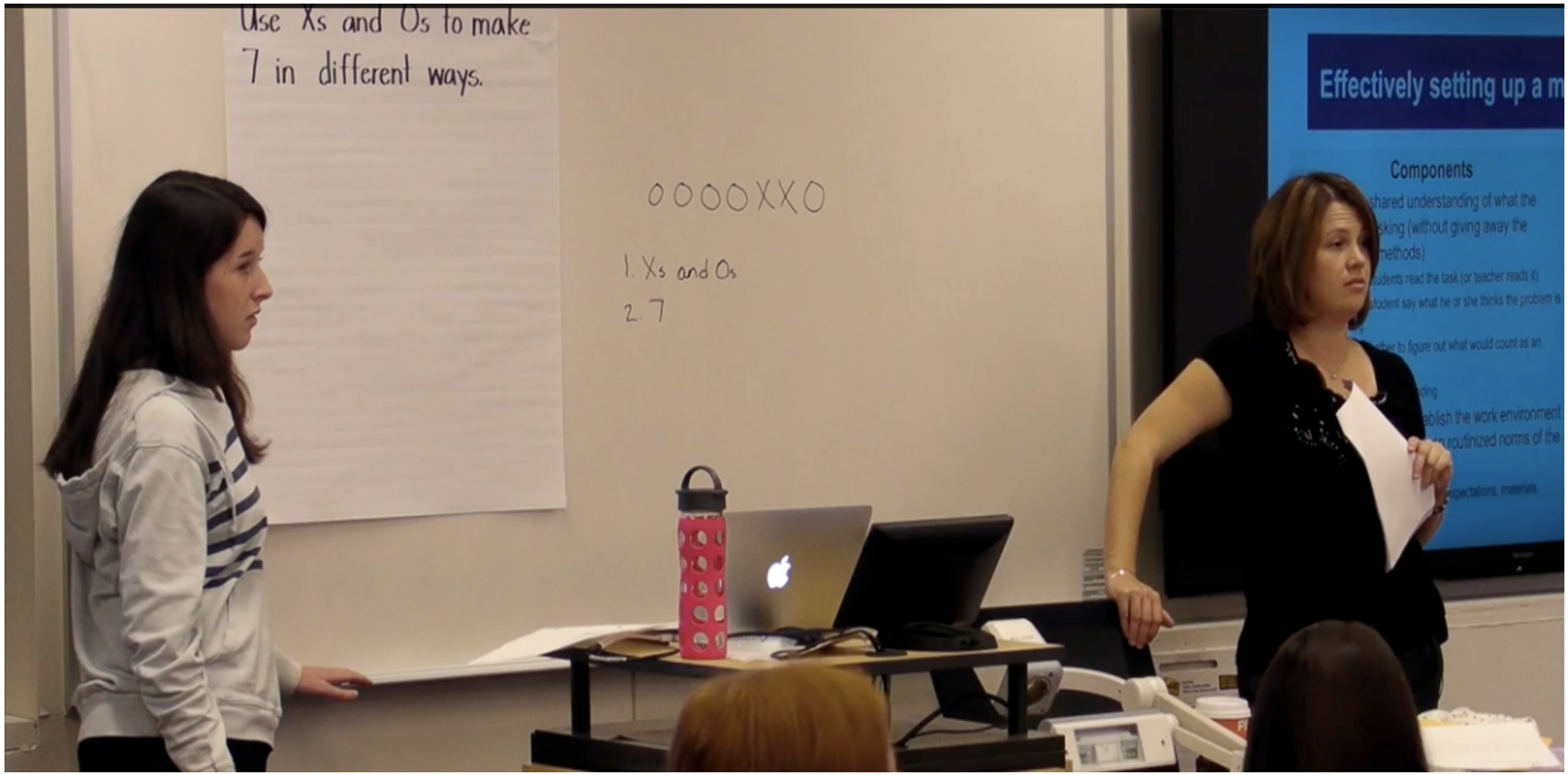
# REHEARSING TEACHING PRACTICE





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# A SPECIAL OPPORTUNITY FOR CHANGE

## OPPORTUNITIES

- "Teacher quality" of more interest than ever
- Higher education teacher education dominates the market
- Teacher shortages

## CHALLENGES

- Lack of belief in and concern about teacher preparation
- Dominance of individualism in teacher education and educational reform


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# WHAT IT WOULD TAKE

- Identifying teaching practices essential for beginners, and developing a common curriculum of teacher training focused on them
- Developing common standards for novice practice, with common assessments of performance
- Developing capacity for the teaching of practice: resources, training, shared professional knowledge
- Working in continuous cycles of improvement


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# CORE COMPONENTS OF PRACTICE-FOCUSED TEACHER EDUCATION

- A professional practice **curriculum** that focuses on high-leverage practices of teaching essential for responsible beginning practices and on the knowledge and orientations that support them
- **Instructional activities and settings** that allow for repeated opportunities to practice specific teaching skills, with close coaching, in settings that support professional learning
- Periodic and culminating **performance assessments** that provide information about novices' developing competence in reference to an agreed-upon standard


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# ② IDENTIFYING HIGH-LEVERAGE PRACTICES

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# HIGH-LEVERAGE PRACTICES AND THE WORK OF TEACHING

- Knowing content and caring about children is not sufficient for teaching effectively. What teachers are able to **do** with what they know and care about is what matters.
- Practices are different from principles that guide instruction or standards that provide general benchmarks for good practice. To be effective in teacher training, they should be **specific** and **assessable**.
- High-leverage practices are **core capabilities of the work of teaching.**

# HIGH-LEVERAGE PRACTICES

High-leverage practices (HLPs) are instructional tasks and activities that powerfully promote learning and are fundamental to skillful teaching. They require strong *content knowledge for teaching* and take up **ethical practices** and a commitment to **equity** and diversity.

*Based on work done at the University of Michigan School of Education in the redesign of our teacher education program, and at TeachingWorks, an organization housed at U-M whose mission is to improve the quality of teaching and learning by transforming teachers' education.*



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# EVOLUTION OF OUR WORK

- Our context: resources and challenges
  - Strong program and history of commitment to TE
  - But no consensus around core practices and too few opportunities for novices to practice
- Curriculum Group launched in 2006: What teaching practices are most important for beginners?

# SPECIFYING AND DEVELOPING CONSENSUS

- Given vast scope of teaching practice and brevity of professional training, what is most important?
- Are some aspects of practice fundamental to advanced elements?
- Are there elements of practice that are best or only learned through formal training (rather than experience)?
- What makes a “well-started” beginner?


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# ARTICULATING PRACTICES AT AN EFFECTIVE GRAIN SIZE

- How to decompose the intricate practice of teaching into parts that are small enough to be learnable but still meaningful?
- Does it matter if practices are of different “grain-sizes”?
- What to do about practices that cut across multiple elements of the work?


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# MANAGING THESE PROBLEMS AT THE UNIVERSITY OF MICHIGAN

- Enlisted the experience and imagination of practitioners and researchers to create a comprehensive “map” of the work of teaching
- Identified those aspects of the work that are the most “high-leverage” for beginners
- Deliberately chose tasks and activities at grain-sizes useful for a curriculum of learning to teach


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# EXAMPLES OF CONSIDERATIONS

- *Considerations central to the practice of teaching:*
  - High probability of making a difference in teaching quality and effectiveness
  - Effective in using and responding to differences among pupils
  - Useful broadly across contexts and content
- *Considerations central to teacher education:*
  - Can be assessed
  - Can be taught to beginners
  - Decomposable into parts that are small enough to be learnable but still meaningful

# WHAT IS MEANT BY "CAN BE TAUGHT TO BEGINNERS"?

- Tasks or activities that novices can try out right away, perhaps by practicing on each other
- Not principles or goals, but PRACTICES

*Consider the difference:*

| Practices | Learning activities | Principles |
|---|---|---|
| *Leading a whole-class discussion* or *Setting up and managing small-group work* (TeachingWorks High-Leverage Practices) | *Identifying similarities and differences* *Summarizing* *Notetaking* (all from Robert Marzano framework) | *The teacher understands and uses a variety of instructional strategies…* (InTASC standard #8) |

# ADDITIONAL EXAMPLES OF HLPs

- Making content explicit through explanation, modeling, representations, and examples
- Eliciting and interpreting individual students' thinking
- Implementing norms and routines for classroom discourse and work central to subject-matter domain
- Communicating about a student with a parent or guardian
- Coordinating and adjusting instruction during a lesson
- Analyzing instruction for the purpose of improving it

*For the complete list, see: http://teachingworks.com/work-of-teaching/high-leverage-practices*

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# ③ UNIVERSITY OF MICHIGAN ELEMENTARY TEACHER EDUCATION PROGRAM: ONE ILLUSTRATION

***The new curriculum and assessments shared today have grown out of collaborative work to redesign the University of Michigan elementary teacher education program undertaken in the Elementary Curriculum Design Group (ECDG).***

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# OUR GOAL: WELL-STARTED BEGINNERS

- Teachers who demonstrate beginning proficiency with the high-leverage practices
- "Subject-matter serious" elementary teachers who are able to represent the content with integrity
- Ethical teachers who recognize and can act on their professional obligations

*…. all with room (and tools!) for further growth and development*



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# HIGH-LEVERAGE PRACTICES

**Explaining core content**

**Posing questions about content**

Choosing and using representations, examples, and models of content

Leading a whole-class discussion

**Eliciting individual students' thinking**

Setting up and managing small-group work

**Engaging students in rehearsing an organizational or managerial routine**

**Establishing norms and routines for classroom discourse and work that are central to the content**

**Recognizing common patterns of student thinking in a content domain**

**Composing, selecting, interpreting, and using information from summative assessment**

**Selecting and using particular methods to check understanding and monitor learning**

**Identifying and implementing an instructional strategy or intervention in response to common patterns of student thinking**

**Appraising, choosing, and modifying tasks and texts, for a specific learning goal**

**Enacting a task to support a specific learning goal**

Designing a sequence of lessons on a core topic

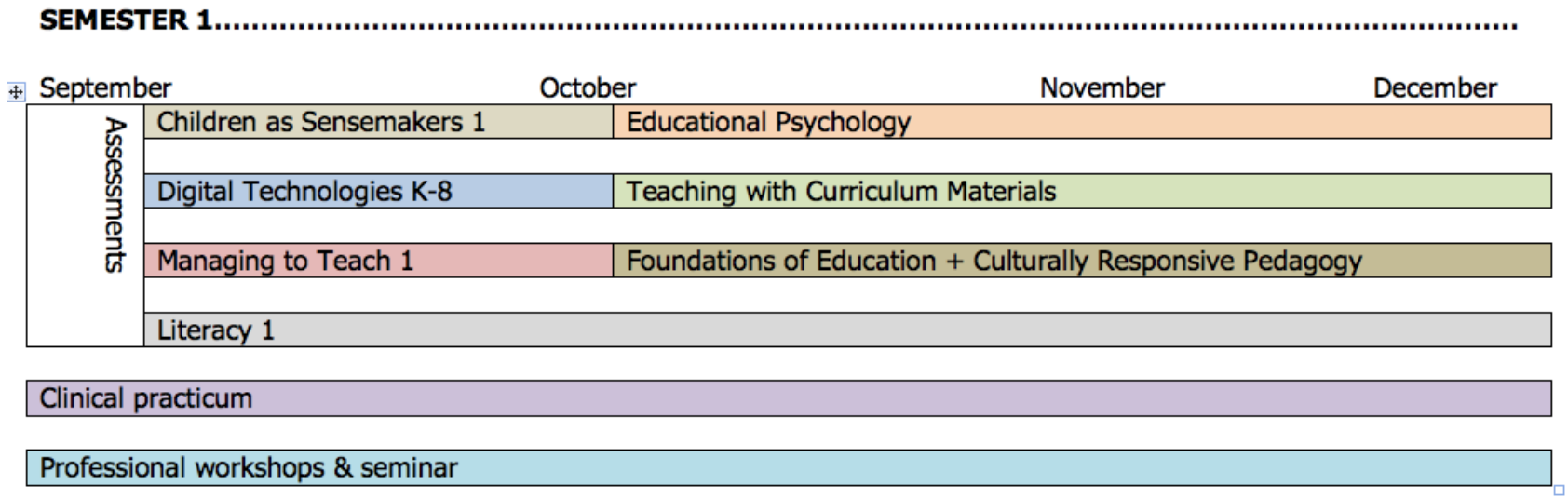
Enacting a sequence of lessons on a core topic

Conducting a meeting about a student with a parent or guardian

**Communicating about a student with a parent or guardian**

**Analyzing and improving specific elements of one's own teaching**

# SEMESTER 1 IN THE PROGRAM




## Features:

- Coursework, fieldwork, and assessments
- Foundations courses & methods courses
- Courses vary in length

# PROGRAMMATIC NATURE OF THE "PROGRAM"

For each course, we have identified:

- Content covered in the course:
  - High-leverage practices
  - Content knowledge for teaching (topics & practices)
  - Ethical obligations of teaching
- Specific learning goals, tied to the content of the course
- Focal learning experiences
- Assessments

**TENSION** ➔ Requires shared agreement within a semester and over time



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# MANAGING TO TEACH 1 COURSE

| | |
|---|---|
| High-leverage practices | • Engaging students in rehearsing an organizational or managerial routine<br>• Establishing norms and routines for classroom discourse and work that are central to the content |
| Content knowledge for teaching | NA |
| Ethical obligations of teaching | • To care for and demonstrate commitment to every student<br>• To learn about and demonstrate awareness of and appreciation for cultural differences and social diversity, particularly as they are present in one's classroom, and to draw on diversity as a resource in instruction<br>• To understand and exercise carefully the power and authority of the teaching role |

- Specific learning goals, tied to the content of the course
- Focal learning experiences
- Assessments

# MATH METHODS (SEMESTER 3)

- Length: 9 week course (2 credits)
- Point in program:  Third semester of the four semester program
- Prior learning opportunities include work on:
  - Building relationships with students
  - Giving directions to students
  - Eliciting and interpreting student thinking across content areas
  - Leading discussions in social studies

# MATH METHODS (SEMESTER 3)

| | |
|---|---|
| High-leverage practices | • Explaining core content<br>• Leading whole class discussions<br>• Recognizing and identifying common patterns of student thinking<br>• Selecting and using particular methods to check understanding and monitor learning<br>• Enacting a task to support a specific learning goal |
| Content knowledge for teaching | • Topics: Place value, meanings of operations, operations with whole numbers<br>• Practices: Representing mathematical ideas, making sense of problems, explaining mathematical ideas, attending to precision |
| Ethical obligations of teaching | • To develop and continually work to improve instructional competence, and to strive to engage in professionally-justified teaching practice at all times<br>• To ensure equitable access to learning in one's own classroom<br>• To represent the ideas of the academic disciplines and subject-matter that one teaches with integrity |

- Specific learning goals, tied to the content of the course
- Focal learning experiences
- Assessments



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# PARTS OF LEADING A PROBLEM-BASED MATHEMATICS DISCUSSION

- Setting up the mathematics problem
- Monitoring as students work independently on the problem
- Launching the discussion
- Orchestrating the discussion
- Concluding the discussion



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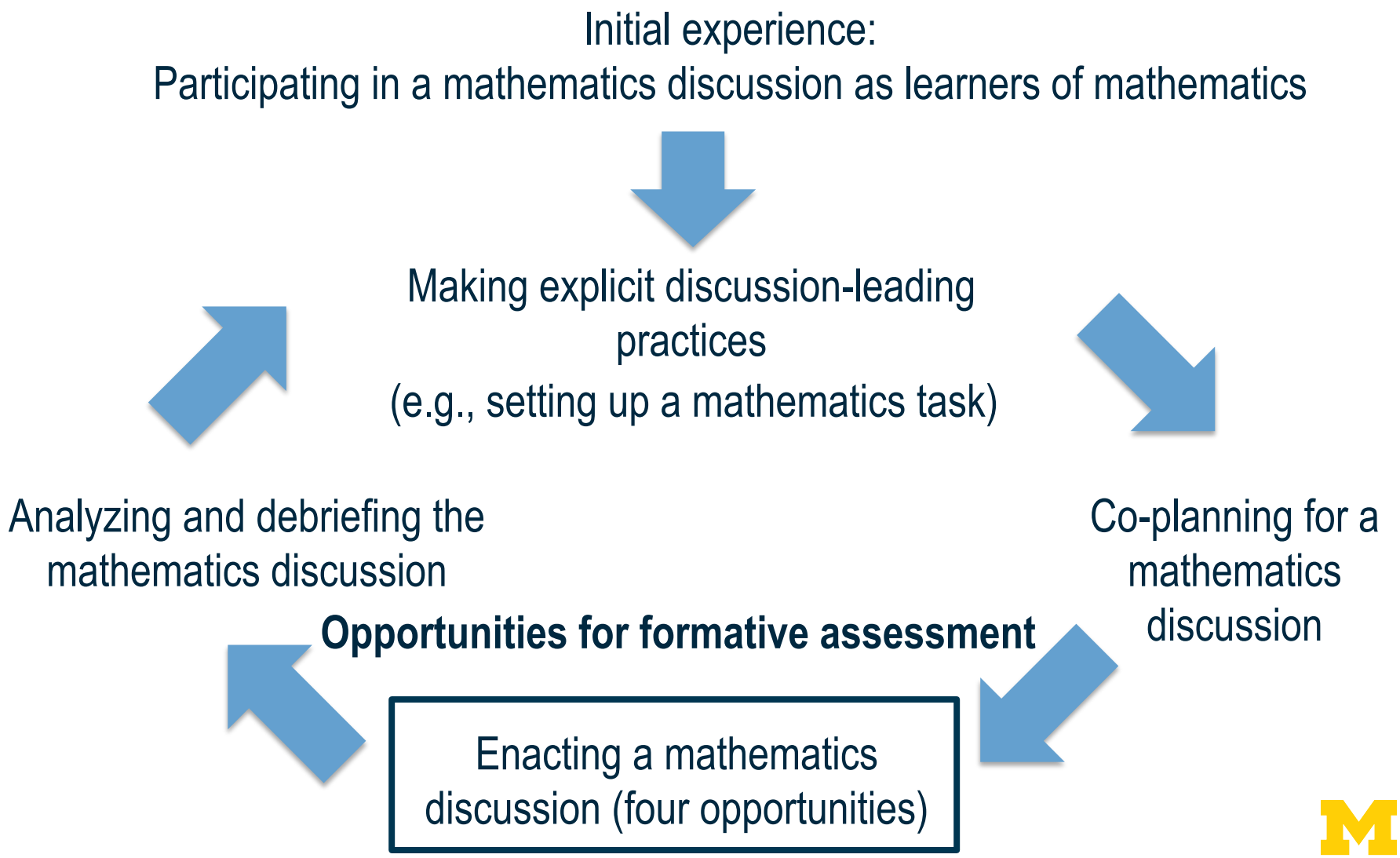
# LEARNING TO LEAD MATHEMATICS DISCUSSIONS



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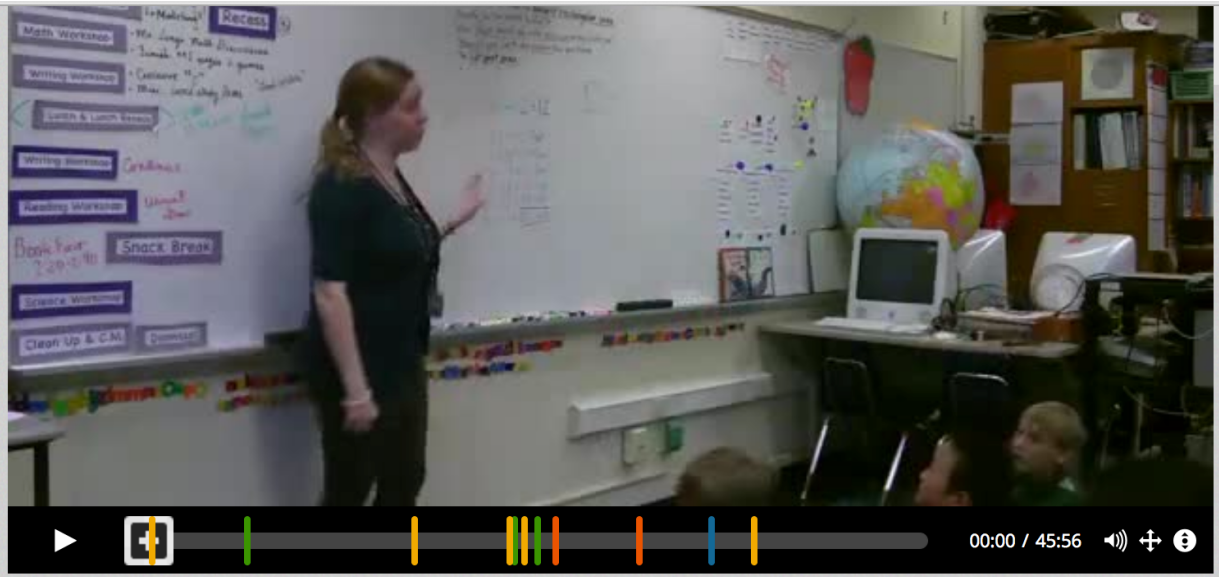
# FEEDBACK ON SPECIFIC MOMENTS: USING EDTHENA




Comments 2 Questions 3 Suggestions 1 Strengths 5 Notes

22:00 .Here the "this" referent is clearer because you are pointing to a drawing on the board. - 2 months ago

Reply

22:48 Instead of saying "does this make sense to everyone?", try using language like "does anyone have a question about this?" This wording is more open and frames how students might respond differently (i.e., I have a question instead or this doesn't make sense). - 2 months ago

Reply

23:50 .Was your MT using color here to emphasize what should sum to 12? Color can be quite useful for tasks like this. - 2 months ago

Reply

**DESCRIPTION**

Problem:
Gina has 24 feet of fence.
She wants to make the largest rectangular area possible for her rabbit to play in.
What length should she make each side of the rabbit pen?
Show all your work and explain how you found the largest area.
Answer: All four sides should be 6 feet

End-of-discussion-check:
Problem: Fred has 12 meters of rope.
He wants to make the largest rectangular area possible to rope off his garden.
What length should he make each side of the garden?
Show all your work and explain how you found the largest area.
Answer: All four sides should be 3 meters

**GRADE** 3

**SUBJECT**

Math

**UPLOAD DATE** December 04, 2013

**FILES AND LINKS**

Discussion 4
Discussion 4 Problems.docx
Discussion 4 Analysis

Edthena-
https://app.edthena.com

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# ASSUMPTIONS OF THE COURSE DESIGN

- Interns are able to elicit and interpret children's mathematical thinking
- Interns are able to give directions (e.g., transitioning from carpet to seats)

…. and others

***How do we know that teaching interns have these skills?***



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*Assessments*

# ELICITING AND INTERPRETING INDIVIDUAL STUDENTS' THINKING



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# ELICITING AND INTERPRETING STUDENT THINKING

A core teaching practice: to find out what students know or understand, and how they are thinking/reasoning

- Establishing an environment in which a student is comfortable sharing his/her thinking
- Posing questions to get students to talk
- Listening to and hearing what students say
- Probing students' responses
- Developing an idea of what a student thinks
- Checking one's interpretation



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# CHALLENGES OF FIELD-BASED ASSESSMENTS

- Contexts may not provide opportunities for interns to demonstrate the skill being assessed
- Teaching interns and children may have shared understandings that influence the interaction
- Teacher educators cannot control the processes children use or the understandings they have
- Variation in assessment contexts makes it difficult to notice patterns across a whole group of interns

# SIMULATION ASSESSMENTS

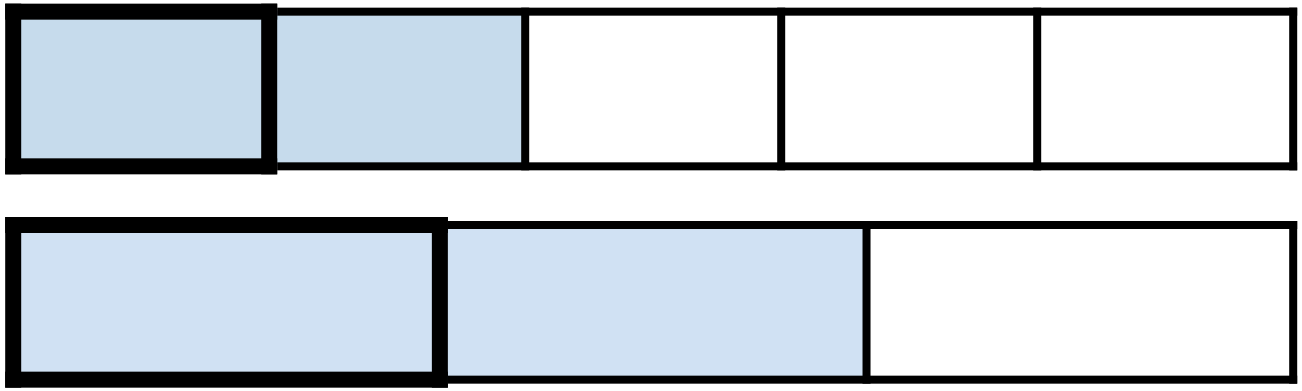
*A situation that represents a context of practice with enough fidelity to elicit authentic professional work.*

- Used in other professional fields (e.g., medicine, nursing, dentistry) as well as in most skilled occupations where skill, knowledge, judgment, and client safety are concerns
- Enable common appraisal of teaching interns' knowledge and skill in ways that control for many sources of variability that complicate assessment of practice




# COMMON NUMERATOR METHOD FOR COMPARING FRACTIONS

2/5 and 2/3



# SETTING THE STAGE FOR ELICITING

The teaching intern:

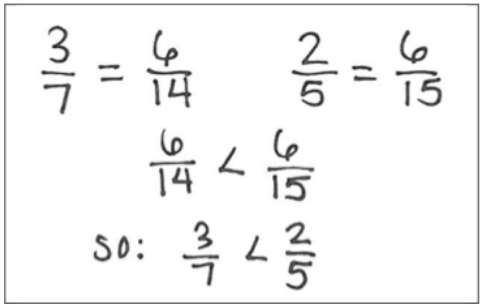
1. **prepares for an interaction with a standardized student about one piece of student work**

*Mathematics task presented to the student:*

Which fraction is greater:

$\frac{3}{7}$ or $\frac{2}{5}$

*Student work:*




Your goal is to elicit and probe to find out what the "student" did to produce the answer as well as the way in which the student understands the steps that were performed.

**Incorrect answer, alternative algorithm, degree of understanding is unclear**

# HOW IS EVIDENCE OF ELICITING SKILLS OBTAINED?

$\frac{3}{7} = \frac{6}{14}$ $\frac{2}{5} = \frac{6}{15}$

$\frac{6}{14} < \frac{6}{15}$

So: $\frac{3}{7} < \frac{2}{5}$

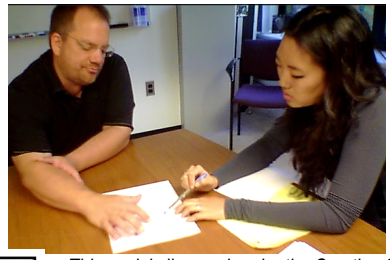
The teaching intern:

1. prepares for an interaction with a standardized student about one piece of student work
2. **interacts with the student to probes the student's thinking**

**A Standardized Student**

Developed response guidelines focused on:

- what the student is thinking such as
  - uses a common numerator approach to compare fractions
  - once has common numerators, always chooses the fraction with the larger denominator as the greater fraction
- general orientations towards responses such as
  - give the least amount of information that is still responsive to the question
- responses to anticipated questions

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# HOW IS EVIDENCE OF INTERPRETATION OBTAINED?

The teaching intern:

1. prepares for an interaction with a standardized student about one piece of student work
2. interacts with the student to probes the student's thinking
3. **responds to questions about her/his interpretation of the student's thinking, including predicting the student's response on a similar task**

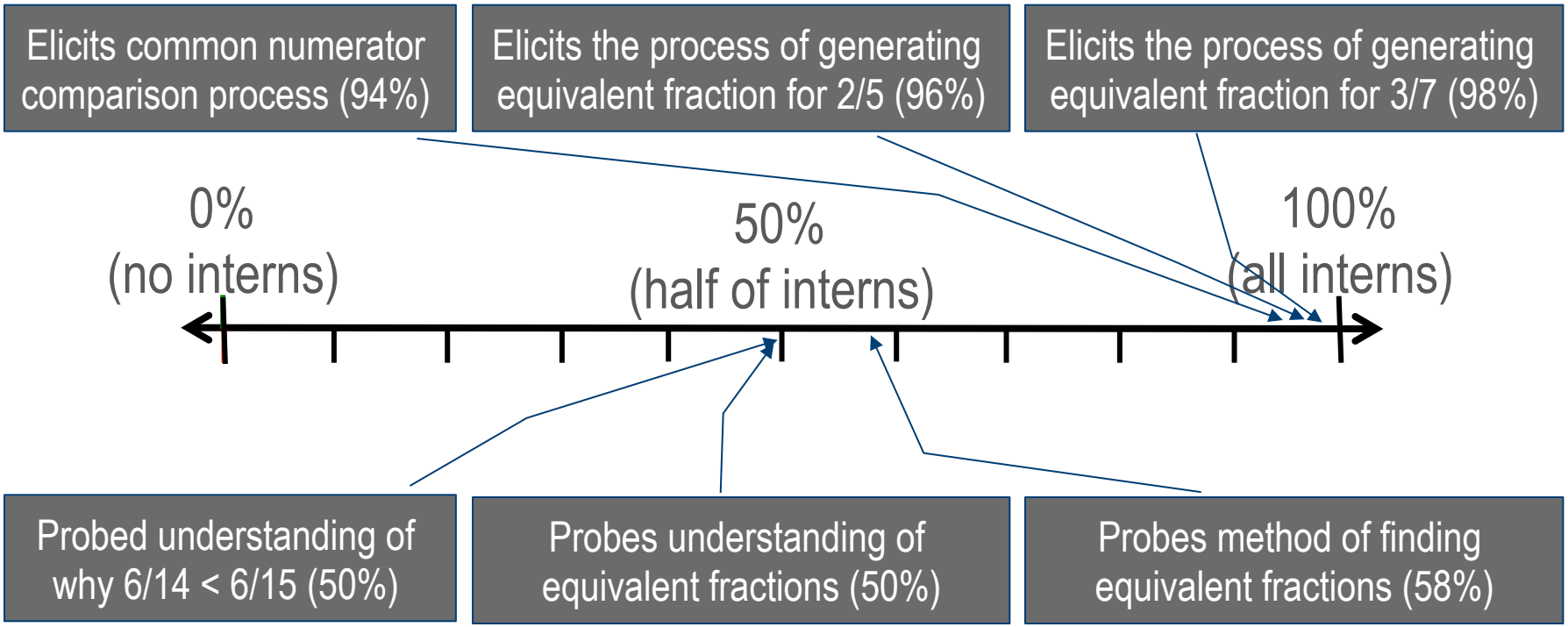
**Questions**

a) Describe what was learned about the student's thinking

b) Predict how the student would solve a similar problem and his/her understanding of key mathematical ideas:

Which fraction is greater: $\frac{8}{9}$ or $\frac{4}{5}$

# PREVALENCE OF ELICITING MOVES




**96% probed understanding of at least one component**

# BENEFITS OF ASSESSING ENACTMENT OF TEACHING PRACTICES

- Focuses design and enactment of learning opportunities on the doing of teaching
- Conveys that teaching practice "counts"
- Strengthens the connection to student learning by focusing on high-leverage practices and assessing teaching interns' skills with those practices



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# PRACTICE-FOCUSED TEACHER EDUCATION

A broad strategy for preparing well-started beginners with three core components:

1. **Curriculum:** Focused on specific skills and practices of teaching, and on the knowledge and orientations that support them
2. **Instructional activities and settings:** Repeated opportunities to practice specific teaching skills, with close, prescriptive coaching, in settings that support professional learning
3. **Assessment:** Formative and culminating performance assessments that provide information about novices' developing competence


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