Introduction to MQI Training

National Center for Teacher Effectiveness

Center for Education Policy Research
HARVARD UNIVERSITY

How do we measure mathematics instruction?

- Complicated question within educational community
- For instance, responses to the Mauricio segment that was part of the pre-training questionnaire
  - "This was really strong mathematics instruction…."
  - "He nicely involved students in the discussion…"
  - "He never let students talk for themselves…."
  - "He covered some really important ideas in a short period of time…."
  - "This instruction is detrimental to student's progress…."
  - "The teacher's use of the mathematics was all wrong…"

Many lenses, little agreement

The MQI

- A standardized instrument for assessing the mathematical quality of instruction
  - Focus is on mathematics and teaching of mathematics, rather than general pedagogy or climate
  - Because MQI is standardized, we ask raters to learn and adopt our way of thinking about mathematics instruction
- Useful analogy:

Take off your glasses, put on ours

The MQI

- A standardized instrument for assessing dimensions that comprise the mathematical quality of instruction
  - Our instrument rates different dimensions separately
  - For example, the MQI would note that in the Mauricio clip:
    - No errors or imprecision in the mathematics
    - Strong meaning orientation of the mathematics
    - Some student participation in development of the mathematics
    - Strong teacher ability to work with student's mathematical ideas

The MQI

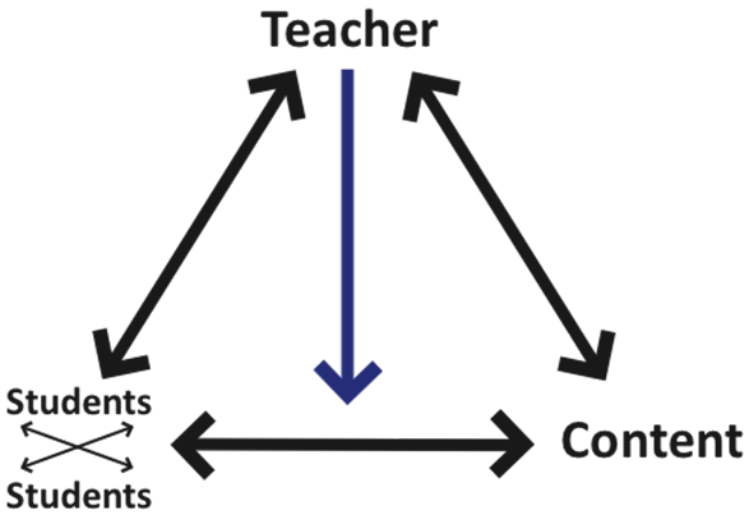
- A standardized instrument for assessing dimensions that comprise the mathematical quality of instruction in the U.S.
  - Developed the instrument by watching a wide array of U.S. elementary and middle school mathematics classrooms
  - Also by reading the literature on U.S. mathematics instruction
  - Keyed to important differences among U.S. teachers
    - Benefit: "Fits" U.S. classrooms well
      - Captures variation in critical dimensions
    - Drawback: Important practices from other countries are not necessarily represented

Training: General Principles

- "Take off your glasses, put on ours"
- Respect for teachers in these videos
- Respect for teachers generally
  - Assume the best –
    - Benefit of the doubt, e.g., Do not record a teacher error unless you are certain it has been made
    - Recognize that even the best teachers make occasional missteps or have less than perfect instruction
    - Recognize that each teacher has strengths and weaknesses
- Criterion is not perfect instruction
  - Impossible to enact
  - Instead, faithfully capture what happened in the lesson

MQI Framework

- The MQI instrument captures the nature of the mathematical content available to students during instruction, as expressed in teacher-student, teacher-content, and student-content interactions



The MQI: Segment Codes

- Classroom Work is Connected to Mathematics
- Richness of the Mathematics
  - Linking and Connections
  - Explanations
  - Multiple Procedures or Solution Methods
  - Developing Mathematical Generalizations
  - Mathematical Language
  - Overall Richness of the Mathematics
- Working with Students and Mathematics
  - Remediation of Student Errors and Difficulties
  - Responding to Student Mathematical Productions in Instruction
  - Overall Working with Students and Mathematics
- Errors and Imprecision
  - Major Mathematical Errors
  - Imprecision in Language or Notation (Mathematical Symbols)
  - Lack of Clarity
  - Overall Errors and Imprecision
- Student Participation in Meaning-Making and Reasoning
  - Students Provide Explanations
  - Student Mathematical Questioning and Reasoning
  - Enacted Task Cognitive Activation
  - Overall Student Participation in Meaning-Making and Reasoning

A segment or “chapter” is a 7.5 minute section of classroom instruction. These codes are scored for each segment of a lesson.

Codes of the MQI: Lesson-Level Codes

Overall MQI and MKT

- Whole-Lesson Mathematical Quality of Instruction (MQI)
- Lesson-Based Guess at Mathematical Knowledge for Teaching (MKT)

Lesson-level codes are scored once for the whole lesson.

MQI Plus

Segment-level codes

- Format of the Segment
- Mode of Instruction
  - Direct Instruction
  - Whole-Class Discussion
  - Working on Applied Problems

Lesson-level codes

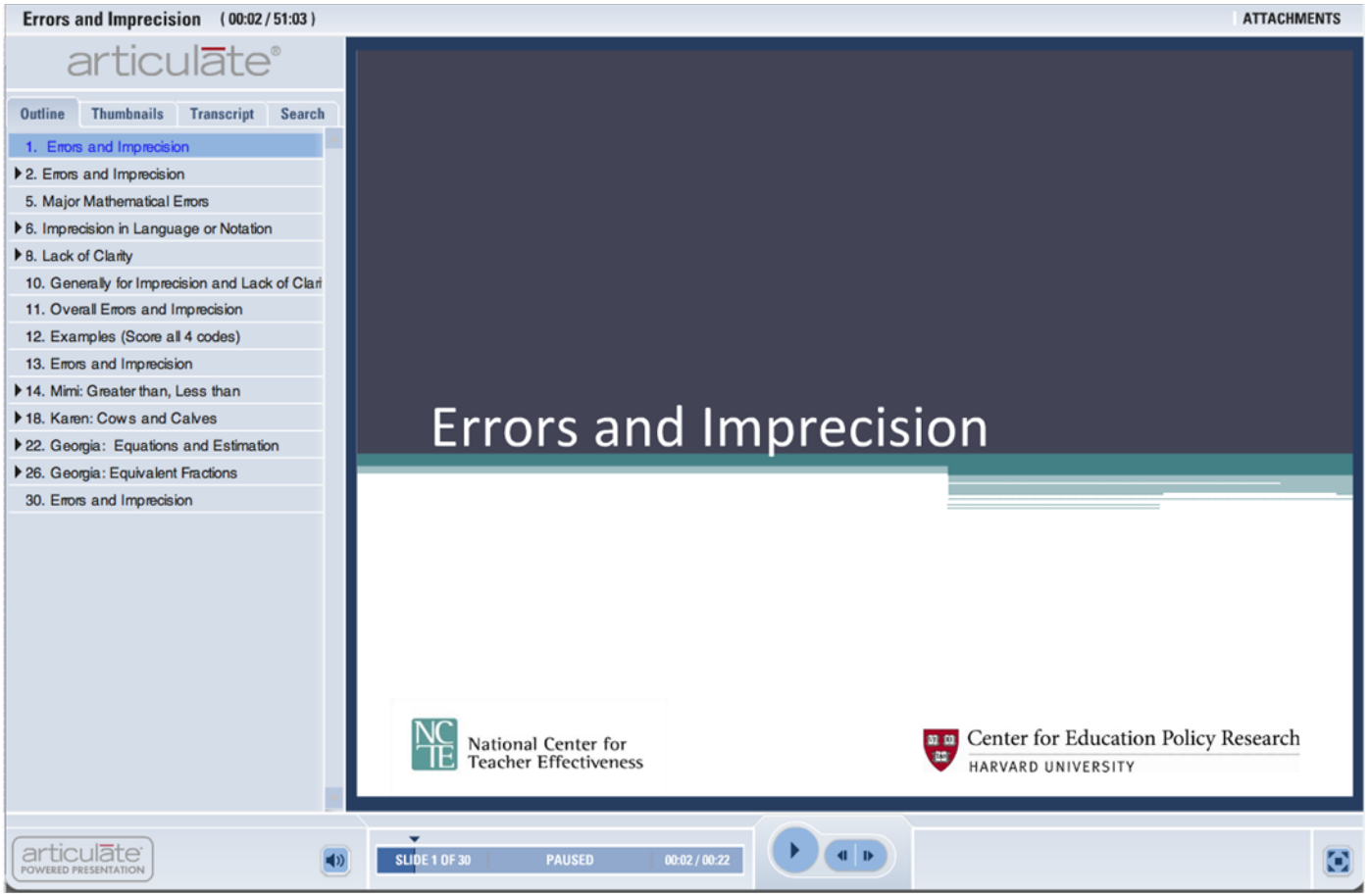
- Whole Lesson Codes
  - Orienting
  - Summarization
  - Checking Broadly for Understanding
  - Differentiated Instruction

Training for the MQI Plus is available for NCTE raters or upon request.

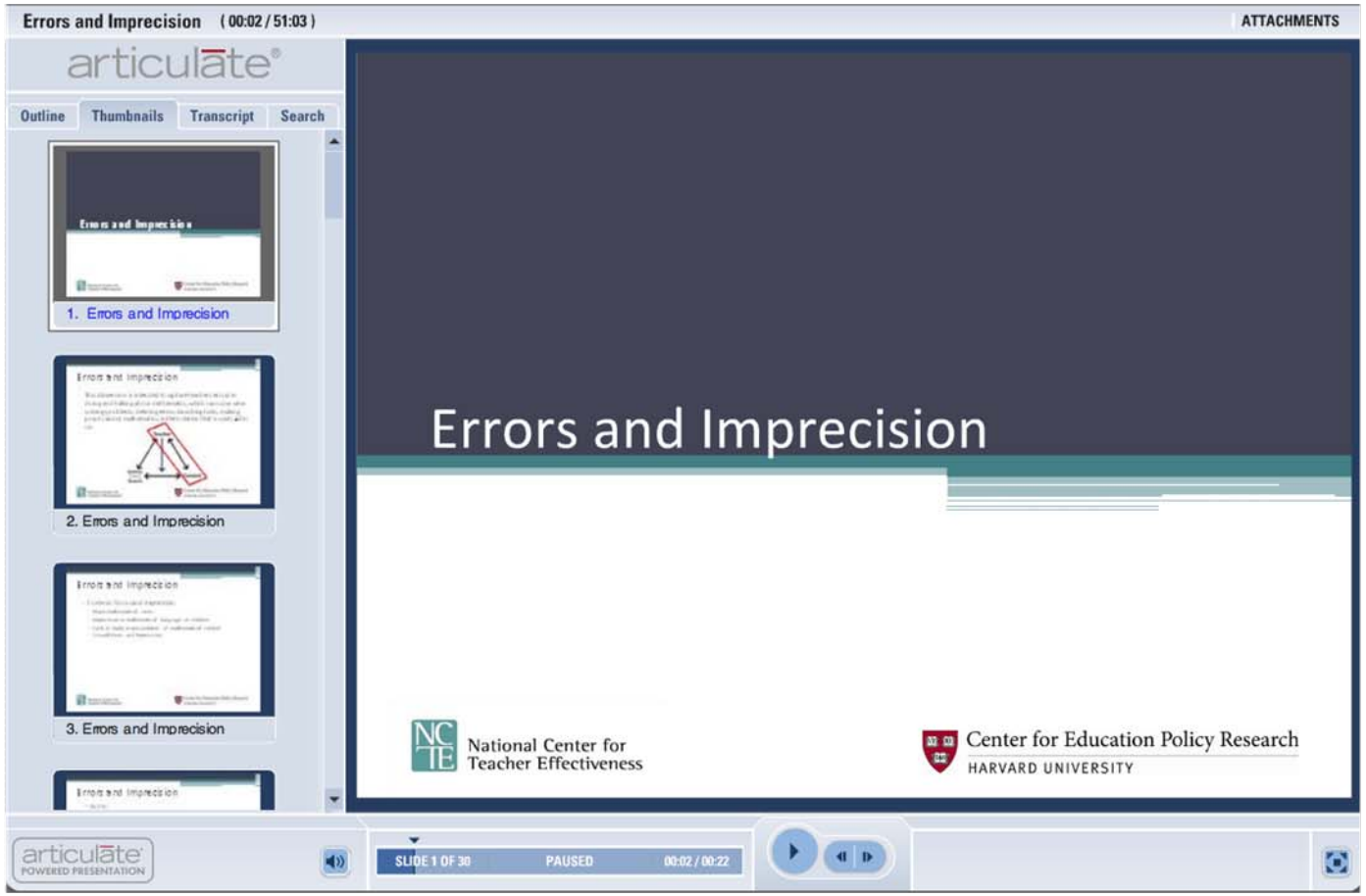
Scoring the MQI codes

- Almost all the codes are scored based on a three point scale:
  - Low (1)
  - Mid (2)
  - High (3)
- Depending on the code, these ratings are based on quantity or quality of behaviors in the lesson
  - These differentiations are discussed in each of the training modules

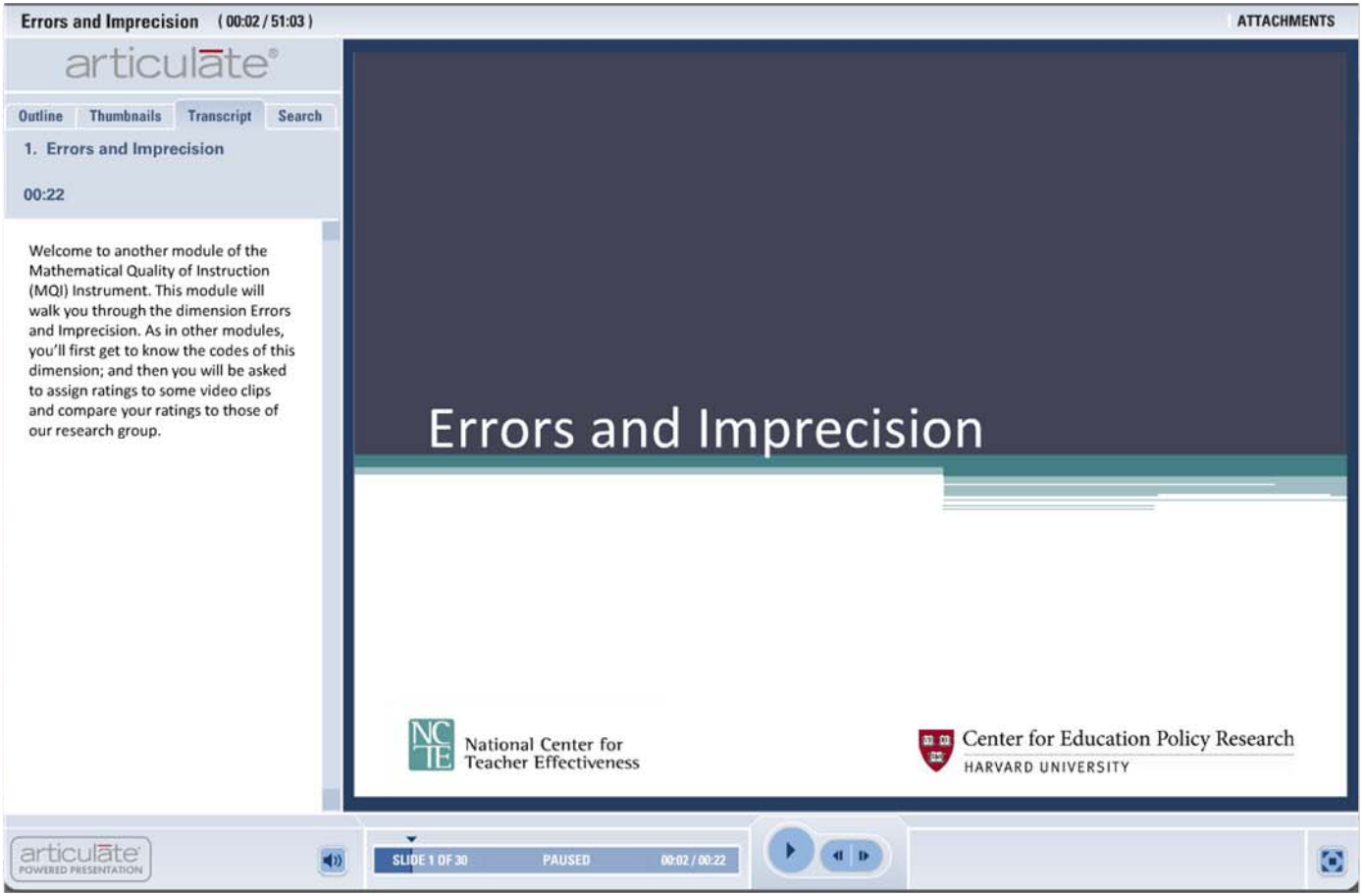
How to use the module player



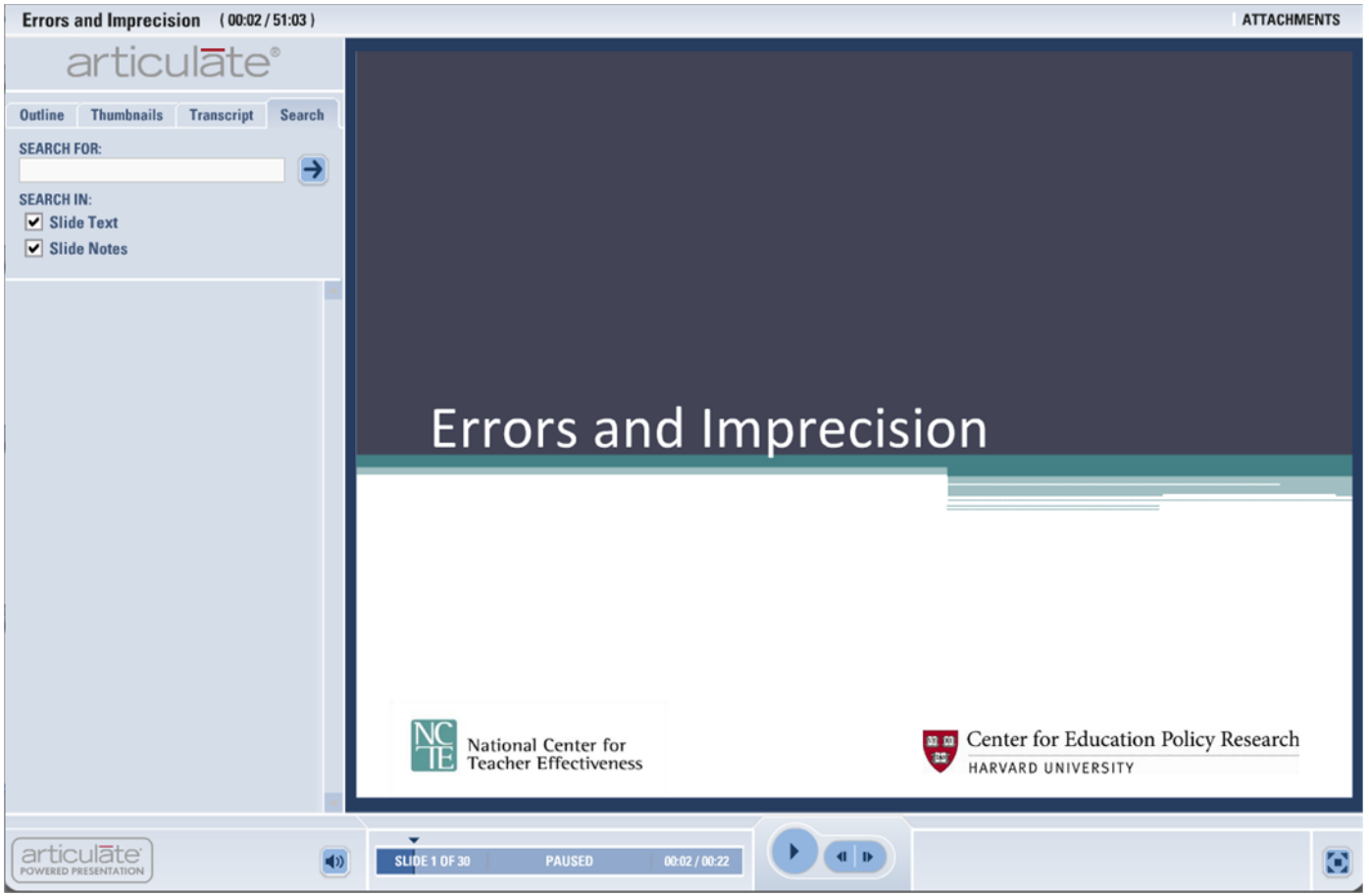
Thumbnails tab



Transcript tab



Search function



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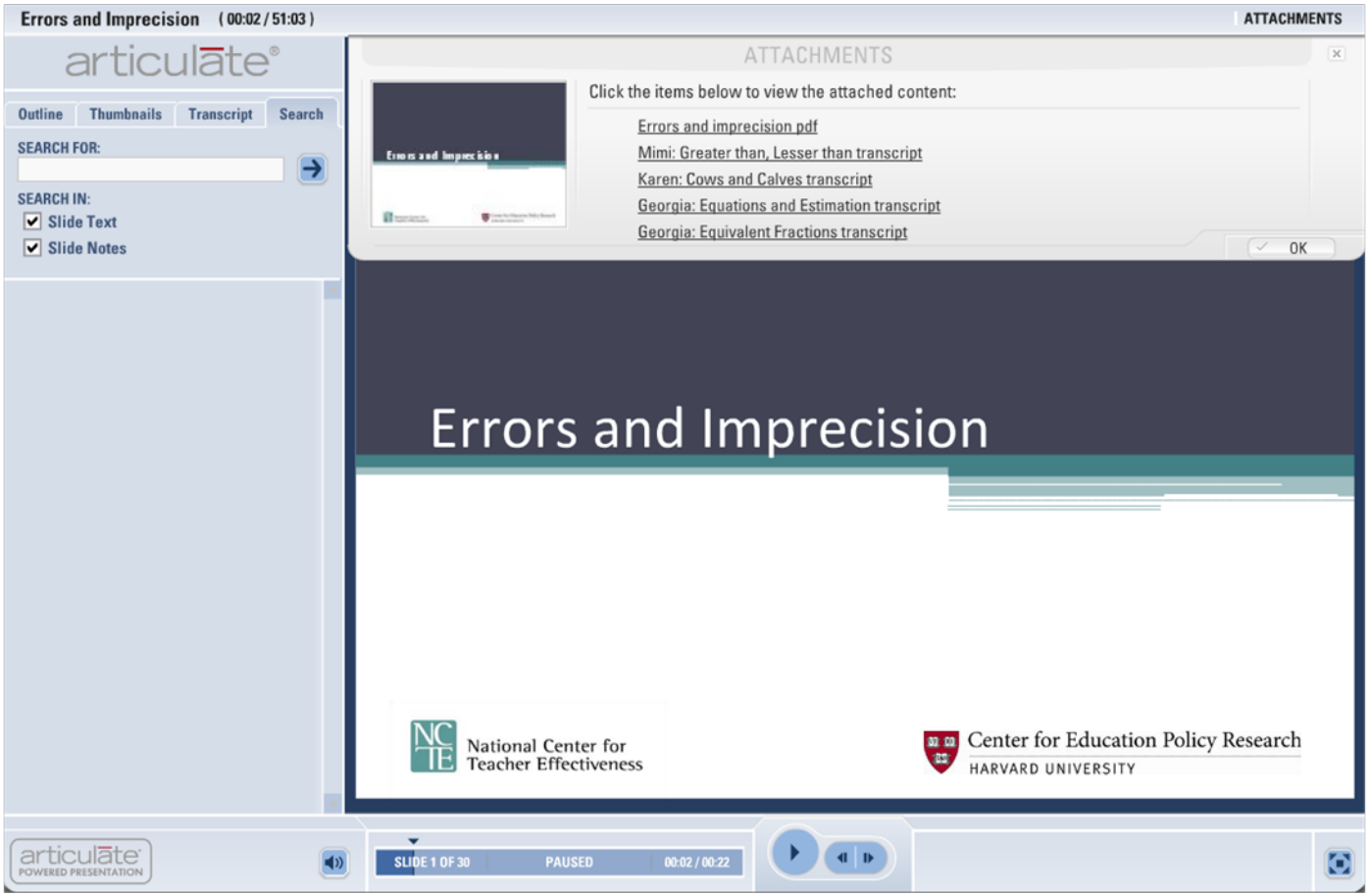
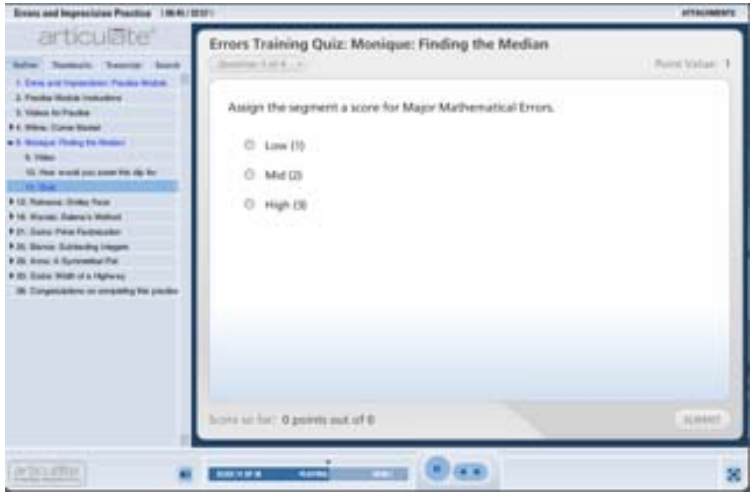
Attachments



Video

Video clips are included in the training as examples . Please note that most clips are shorter than a standard segment.

Quizzes



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Structure of training

- Pre-training questionnaire
- Training modules for each dimension
- Practice modules
  - Video clips
  - Quizzes with feedback on your scoring
- Post-training questionnaire
- Certification

- **ETS/MET raters** should also complete the training module for the Explicitness and Thoroughness in the Presentation of Content code from the MQI Lite. Also note, there is additional practice and training through the MET (Teachscape) website.
- **NCTE raters** should be sure to complete the training for the MQI Plus codes.