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

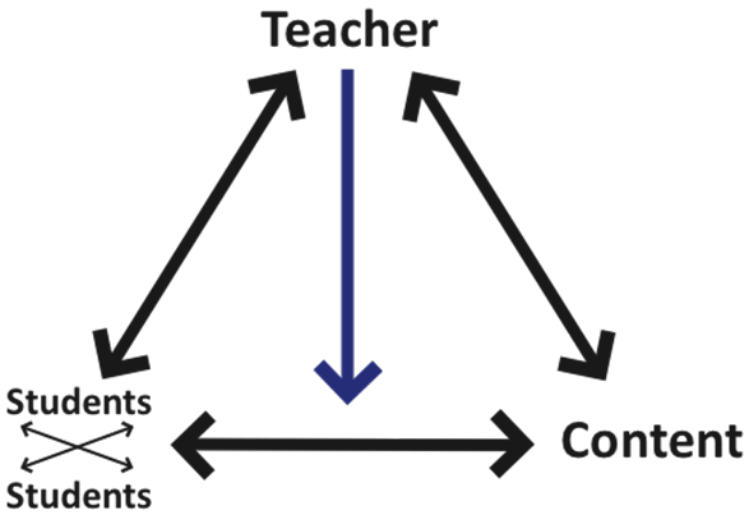
- A standardized instrument for assessing dimensions that comprise the mathematical quality of instruction in the U.S.
  - Developed the instrument by watching a wide array of U.S. elementary and middle school mathematics classrooms
  - Also by reading the literature on U.S. mathematics instruction
  - 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 "Core" 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

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)

MQI Plus

Segment-level codes

- Format of the Segment
- Mode of Instruction
  - Direct Instruction
  - Whole-Class Discussion
  - Working on Applied (Real-World) Problems

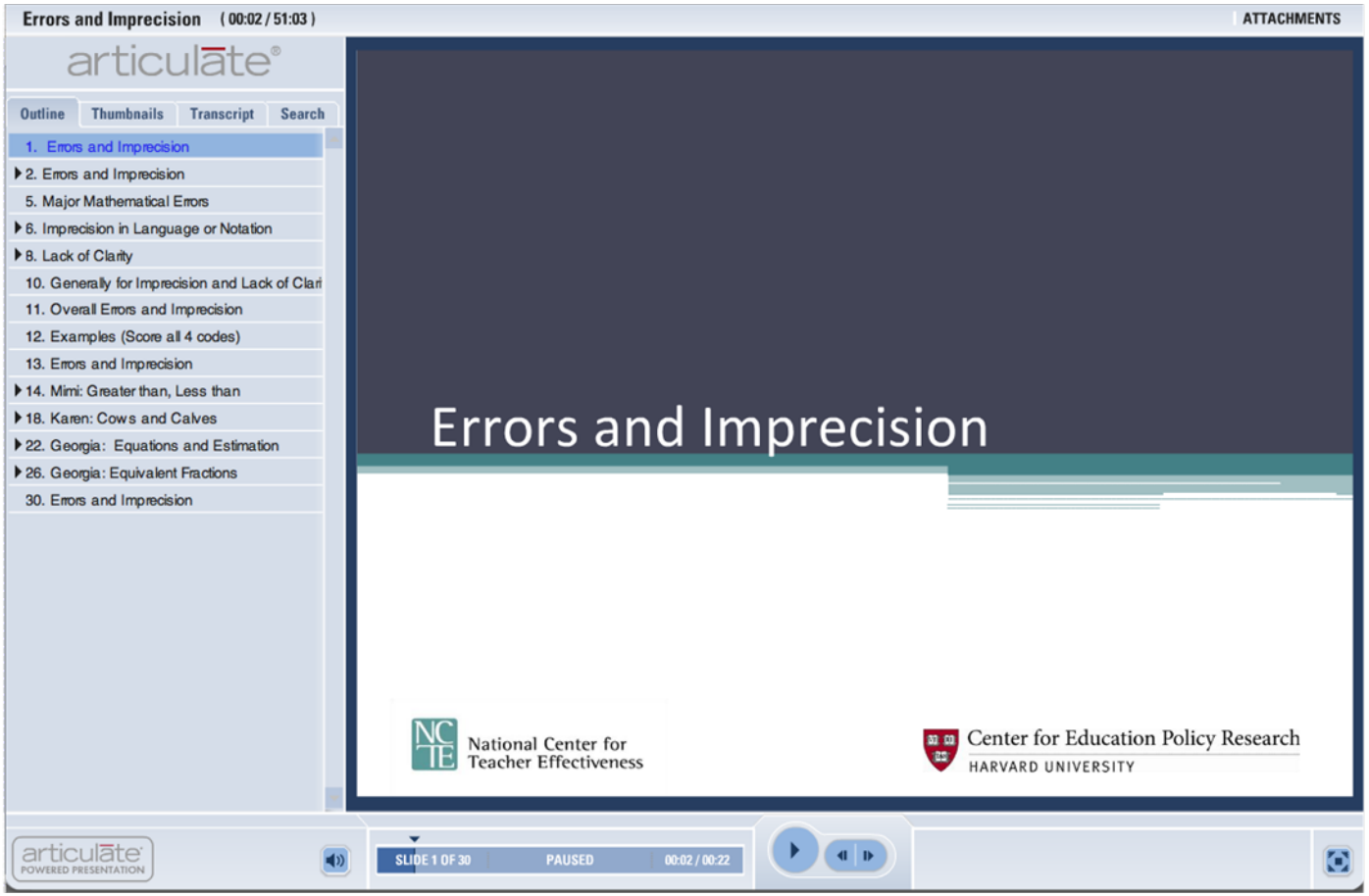
Lesson-level codes

- Orienting
- Summarization
- Checking Broadly for Understanding
- Differentiated Instruction

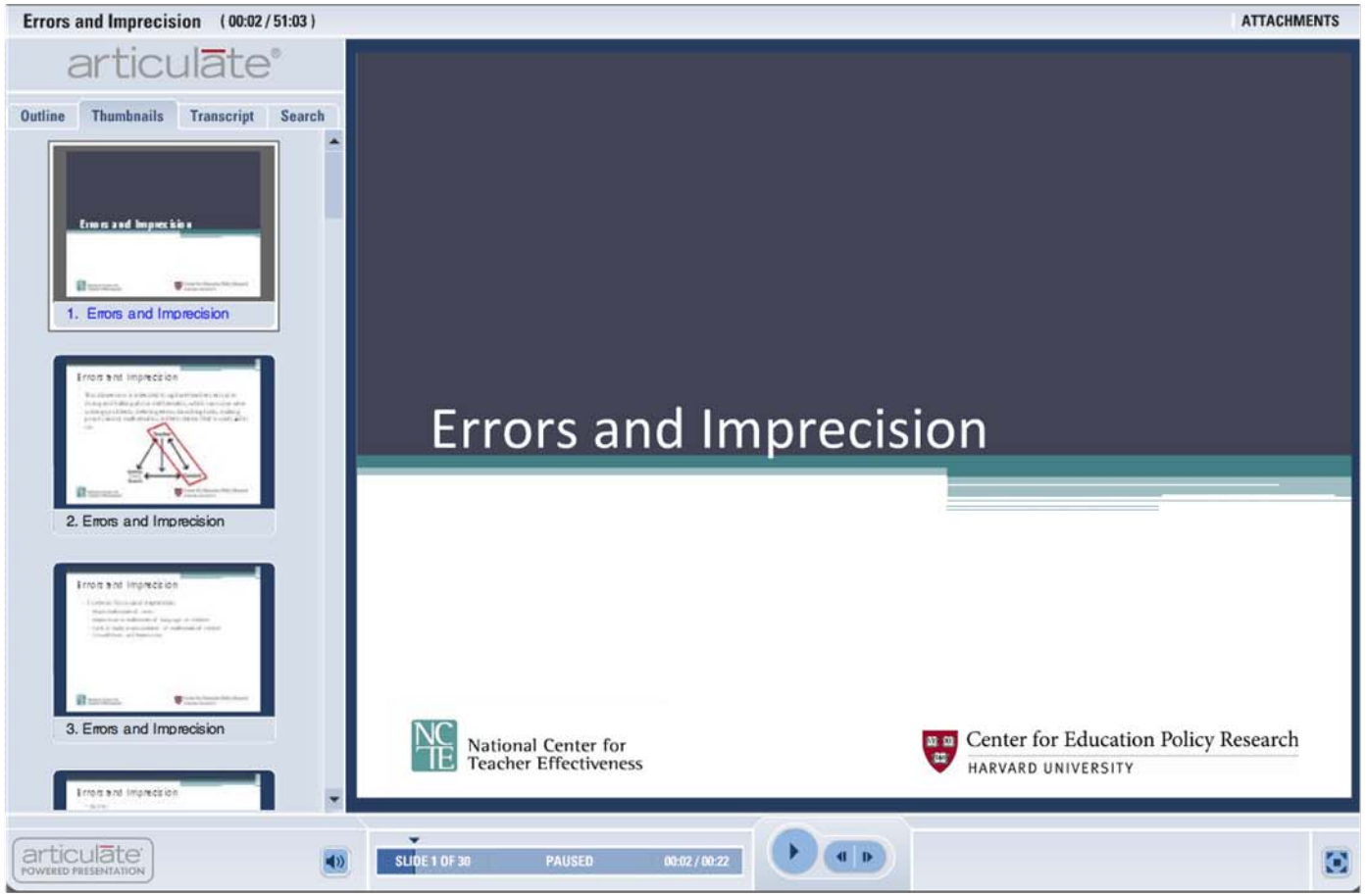
Scoring the MQI codes

- 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



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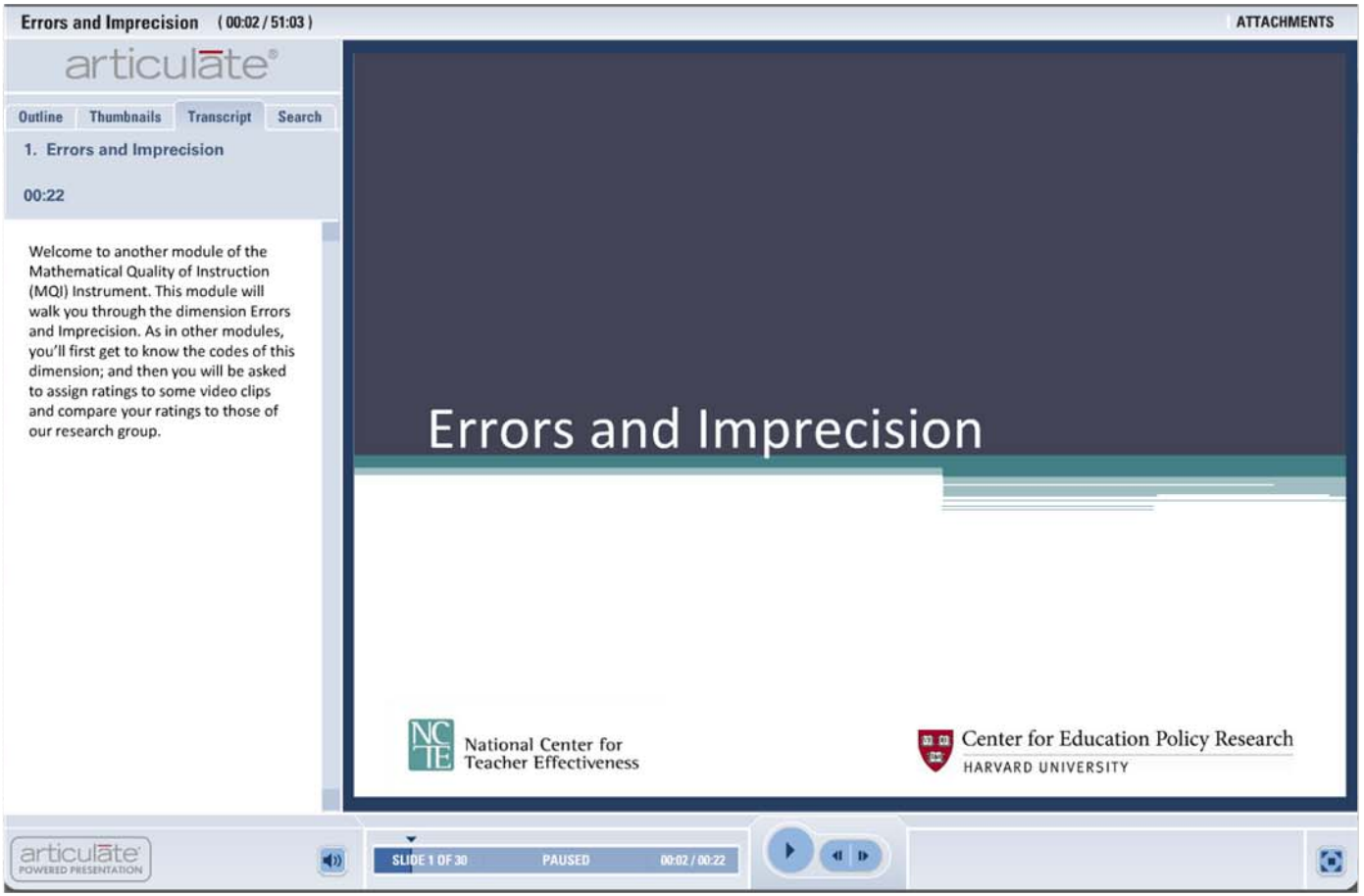
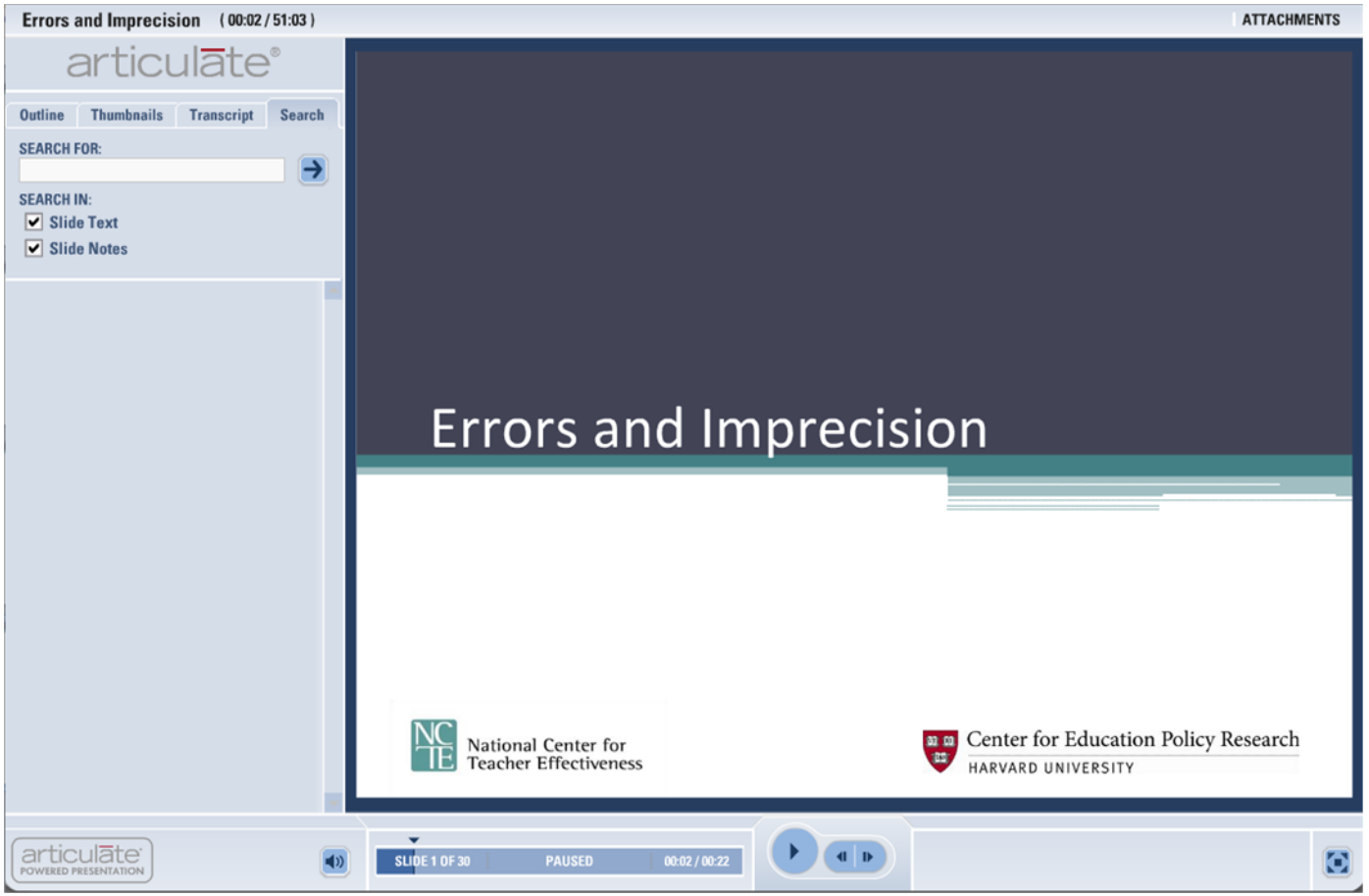
Transcript tab



Search function



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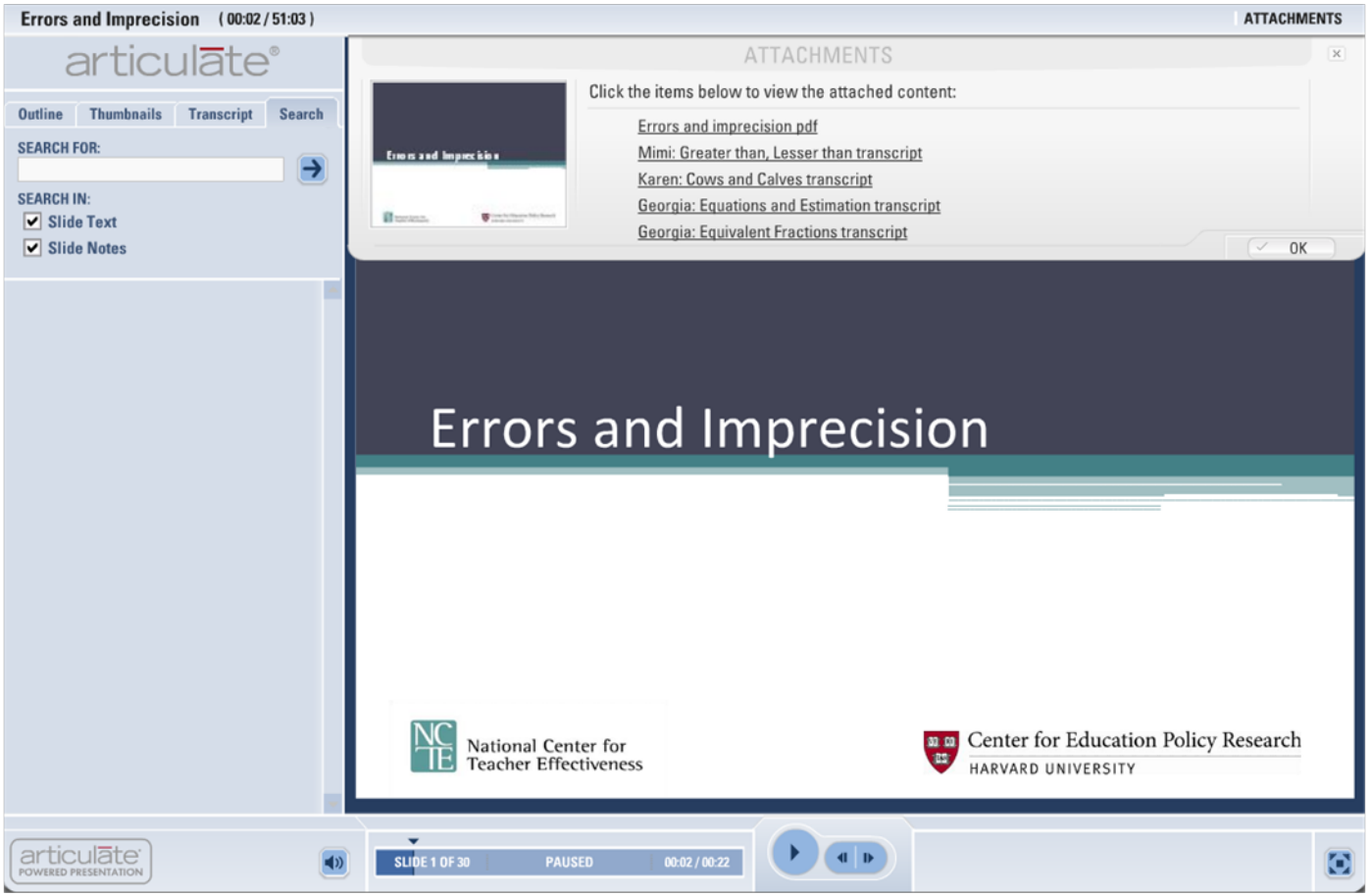
Attachments



Video

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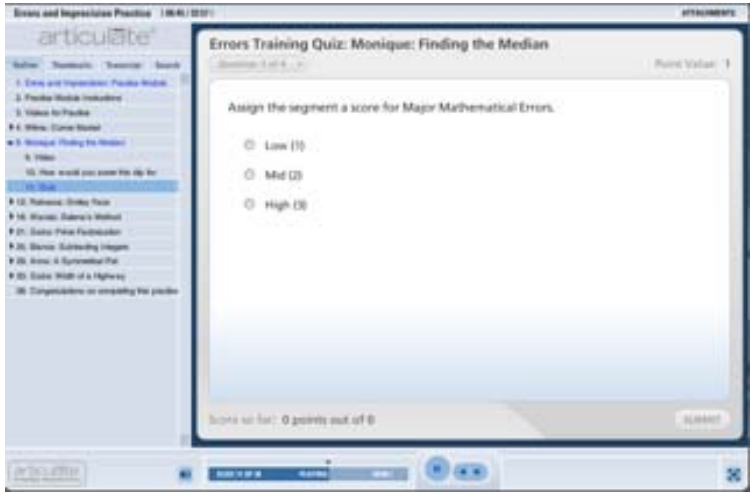
Quizzes



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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, your additional practice on the MET player is linked to on the practice pages