

ED 589: Employing Learning Trajectories to Better Serve the Needs and Enhance the Achievement of Children Struggling in Mathematics

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COURSE CREDIT: 2 graduate credits

DATES & TIMES: Feb. 24: 8:00am - 3:30pm
Feb. 25: 8:00am - 3:30pm

COURSE DESCRIPTION: This course will answer the following questions:

- What are learning trajectories in mathematics and how can these trajectories facilitate a deeper knowledge of the core content standards in mathematics?
- How can learning trajectories promote a better understanding about children's thinking regarding rational numbers, ratio, and measurement?
- How can an understanding of learning trajectories, regarding rational numbers, ratio, and measurement, better inform interventions for struggling learners?
- What are some of the recommended diagnostic strategies and tools?

PARTICIPANT LEARNING OUTCOMES: Upon completion of this course, participants will be able to:

1. Describe the purpose of learning trajectories, both in terms of understanding the core content standards for mathematics and informing instruction.
2. Use learning trajectories to promote a deeper understanding of children's abilities and related needs in mathematics.
3. Gather and analyze data from students to inform instruction, design and implement intervention(s), and monitor the efficacy of these interventions in the area of rational numbers, ratio, and measurement.
4. More effectively participate in the RtI process in mathematics, both at the building level and the level of the individual student.

REQUIRED TEXTS: Not applicable; conference participants will receive necessary materials as provided by the presenters.

COURSE REQUIREMENTS:

1. Class participation and attendance: Course participants seeking two semester hours of credit are expected to first attend the entire two day session for a total of 15 classroom contact hours.
2. After selecting either rational numbers, measurement, or ratio as a focal point, course participants will also be required to complete an independent study project containing:
 - a. A pre-assessment, containing an *informal interview* and *analysis of work samples*, to clarify the nature of a student's struggle in the selected area (above)
 - b. A meaningful and relevant instructional objective for the student (derived from student interview/work samples and *clearly linked* to proscribed learning trajectories in the selected area of focus)
 - a. *Effective instructional strategies* in the selected area (as presented in conference sessions)
 - b. Articulation of the *rationale* for the selected strategies, as per learning trajectories
 - c. *Descriptive record of implementation* of the selected strategies (to include a minimum of two specific lesson sequences)
 - d. *Meaningful assessment (pre and post assessment data, linked to proscribed learning trajectories in rational numbers)* of student growth following the implementation of the selected strategies

- e. A personal statement regarding how participation in this conference has altered the researcher's perspective of his or her role in the education of students struggling in mathematics
5. The expected time commitment to each of the project components is outlined, below:

Course Requirement	Number of clock hours (and resulting credit hours) anticipated for completion of this component
Daily and complete participation in the course	15 clock hours (1 semester credit)
Independent study project	30 clock hours (1 semester credit)

6. The cost for two hours of Adams State Credit is \$120.00

7. Project due date is **Monday, May 1, 2012**. All projects must be submitted, via email, to Patty Meek at JPMeekis@comcast.net. Transcripts will be received from Adams State, shortly after grades are submitted. It is anticipated that transcripts will be available in late May or early June.

GRADE DISTRIBUTION AND SCALE:

Summary of points

Conference attendance and participation	20%
Independent study	80%

Grade distribution (as per rubric)

90 - 100%	A
80 - 89%	B
70 - 79%	C
60 - 69%	D
68 and below	F

Grading Rubric for Independent Study Project

3 Points	2 points	1 point
<p>General background information (gender, grade level, achievement level, special education status (or level of support received via RTI process), second language learner, etc.) regarding the student is included and complete.</p>	<p>General background information (gender, grade level, achievement level, special education status (or level of support received via RTI process), second language learner, etc.) regarding the student is included but incomplete.</p>	<p>General background information (gender, grade level, achievement level, special education status (or level of support received via RTI process), second language learner, etc.) regarding the student is not included.</p>
<p>An area of focus (rational numbers, measurement, or ratio) has been clearly identified.</p>	<p>An area of focus (rational numbers, measurement, or ratio) has been somewhat identified.</p>	<p>An area of focus (rational numbers, measurement, or ratio) has not been clearly identified.</p>
<p>The student interview and analysis of work samples (see below) is thorough and the methodologies employed in the analysis <i>are clearly linked to, and reflect a strong understanding of, the conceptual base of learning trajectories in mathematics.</i></p>	<p>The student interview and analysis of work samples (see below) is thorough but the methodologies employed in the analysis <i>are only somewhat linked to, and/or reflect some understanding of, the conceptual base of learning trajectories in mathematics.</i></p>	<p>The student interview and analysis of work samples (see below) is not thorough and/or the methodologies employed in the analyses <i>are not clearly linked to, nor reflective of, the conceptual base of learning trajectories in mathematics.</i></p>
<p>Insights from student interviews and analysis of work samples (<i>conducted during and following each of the chosen activities</i>)* contain the depth and detail necessary to clearly genuinely understand the needs of and barriers faced by the student in the selected area.</p>	<p>Insights from student interviews and analysis of work samples (<i>conducted during and following each of the chosen activities</i>)* are included but lack the depth and detail necessary to clearly genuinely understand the needs of and barriers faced by the student in the selected area.</p>	<p>Insights from student interviews and analysis of work samples (<i>conducted during and following each of the chosen activities</i>)* are not included.</p>
<p>A hypothesis regarding the nature of the student's struggles in the selected area reflects the insights gained from the student interview and analysis of work samples.</p>	<p>A hypothesis regarding the nature of the student's struggles in the selected area only somewhat reflects insights gained from interview results and analysis of work sample.</p>	<p>A hypothesis regarding the nature of the student's struggles in the selected area is doesn't reflect insights gained from the interview and analysis of student work samples.</p>
<p><i>The hypothesis is stated in a way that reflects a strong understanding of the role of learning trajectories in mathematics.</i></p>	<p><i>The hypothesis is stated in a way that somewhat reflects an understanding of the role of learning trajectories in mathematics.</i></p>	<p><i>The hypothesis is stated in a way that does not reflect a strong understanding of the role of learning trajectories in mathematics.</i></p>
<p>An objective(s) that the student must accomplish is clearly articulated.</p>	<p>An objective(s) that the student must accomplish is stated but is somewhat vague.</p>	<p>A learning objective(s) for the student is not stated.</p>

Summary of two lesson plans (outline form) included and contains the depth and detail necessary to understand the flow and purpose of the unit.	Summary of one lesson plan (outline form) included but lacks the depth and detail necessary to understand the flow and purpose of the unit.	Summary of lesson plans (outline form) not included.
A minimum of three relative instructional elements, selected from the conference materials, are clearly identified and effectively integrated into the instructional sequence.	Two relative instructional elements, selected from the conference materials, are clearly identified and effectively integrated into the instructional sequence.	One relative instructional elements, selected from the conference materials, is clearly identified and effectively integrated into the instructional sequence.
A strong personal statement, from the teacher/researcher, is included and thoughtfully addresses the question of “How has an understanding of learning trajectories in mathematics enhanced my efficacy as an educator and how will this understanding alter my role or my perceived role in my educational setting?”	A personal statement, from the teacher/researcher, is included and somewhat addresses the question of “How has an understanding of learning trajectories in mathematics enhanced my efficacy as an educator and how will this understanding alter my role or my perceived role in my educational setting?”	A personal statement, from the teacher/researcher, addressing the question of “How has an understanding of learning trajectories in mathematics enhanced my efficacy as an educator and how will this understanding alter my role or my perceived role in my educational setting,” is not included.
Paper is well written in terms of organization, detail, language mechanics, and scholarliness.	Some errors or omissions in terms of organization, detail, and language mechanics somewhat impede the efficacy of the writing.	Numerous errors or omissions in terms of organization, detail, and language mechanics significantly impede the efficacy of the writing.