

Measuring Teachers' Fidelity of Implementation to Algebra Curricula that Emphasize Mathematical Practices: Study Background Information

	Transition to Algebra (TTA)	Learning and Teaching Algebra (LTA)	Mathematical Practices Implementation Study (MPI)
Goals of study	<p>Develop a curriculum intervention to support students who are underprepared for Algebra 1.</p> <p>Conduct a quasi-experimental field test to seek evidence of promise of the intervention to raise the competence and confidence of students in mathematics.</p> <p>http://ttalgebra.edc.org/</p>	<p>Develop a companion intervention to the CME Algebra 1 curriculum to support teachers and coaches in their initial year implementation.</p> <p>Conduct a quasi-experimental field test to identify the initial impact of LTA materials on teachers' mathematical knowledge and use of Common Core State Standards (CCSS) by students.</p>	<p>Examine the first two years of implementation of the CME Algebra 1 curriculum among new teacher users who receive a moderate level of professional development support.</p> <p>Conduct a mixed-methods study to examine relationships among teachers' CME curriculum use, mathematical knowledge, and instructional practice.</p>
Research questions related to fidelity	<p>Do students with teachers who demonstrate higher fidelity to the TTA curriculum have stronger mathematics outcomes?</p>	<p>Does LTA PD and coaching impact classroom fidelity?</p> <p>Does faithful use of LTA materials impact student outcomes?</p>	<p>How may teachers' fidelity to the CME curriculum be related to teachers' mathematical knowledge for teaching and instructional practices over two years?</p> <p>How may teachers' content fidelity be related to their presentation fidelity?</p> <p>What teacher characteristics and school factors may be associated with higher levels of teacher fidelity to the CME curriculum?</p>
Data types used for measuring fidelity	<p>1) Surveys on use of curriculum</p> <p>2) Live classroom observations</p>	<p>1) Surveys on use of curriculum</p> <p>2) Live classroom observations</p> <p>3) Video for refining instrument and confirming scores</p>	<p>1) Surveys on use of curriculum</p> <p>2) Video-recorded classroom observations</p>
Sample for classroom observations	<p>2 high schools/2 district/ 1 state</p> <p>9th grade</p> <p>10 teachers</p> <p>51 observations</p>	<p>17 high schools/5 districts/ 2 states</p> <p>8th and 9th grade</p> <p>40 teachers</p> <p>53 observations</p>	<p>14 high schools/ 10 districts/ 5 states</p> <p>9th grade</p> <p>20 teachers in Year 1, 12 in Year 2</p> <p>176 observations</p>
Timeframe for data collection	<p>One academic year for tool development and data collection</p> <p>(2011-2012)</p>	<p>One academic year each for tool development and data collection</p> <p>(2012- 2014)</p>	<p>Two years for tool development and data collection, occurring simultaneously</p> <p>(2011-2012 and 2012-2013)</p>
Intervention	<p>Curriculum</p>	<p>PD, PD materials, coaching and curriculum</p>	<p>Curriculum</p>

(see reverse for key citations)

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Key Citations

Mathematical Habits of Mind

...we'd like students to think about mathematics the way mathematicians do...They should be able to use the research techniques that have been so productive in modern mathematics, and they should be able to develop conjectures and provide supporting evidence for them.

Cuoco, A., Goldenberg, E. P., & Mark, J. (1996). Habits of mind: An organizing principle for mathematics curriculum. *Journal of Mathematical Behavior*, 15(4), 375–402.

Content Fidelity versus Presentation Fidelity

Tarr, J. E., Grouws, D. A., Chávez, O., & Soria, V. (2013). The effect of content organization and curriculum implementation on students' mathematics learning in second-year high school courses. *Journal for Research in Mathematics Education*, 44(4), 683–729.

Contacts:

TTA – Josephine Louie, jlouie@edc.org

LTA – Miriam Gates, mgates@edc.org, Jess Gropen, jgropen@edc.org

MPI – Zuzka Blasi, zblasi@edc.org