Consultant Requirements
MATH CONTENT AND ASSESSMENT EXPERT

The Community College Research Center (CCRC) at Teachers College, Columbia University seeks an expert on mathematical learning as a part-time consultant for a project entitled *Analysis of Statewide Developmental Education Reform (ASDER)*, which is funded by the Bill & Melinda Gates Foundation. ASDER examines the redesign of developmental English and mathematics in two state community college systems. The project explores redesign implementation, assessment and placement, the use of instructional technology, student academic outcomes, and student learning. The math expert is required for the student learning component, called the Learning Assessment study, which determines whether and how student performance changes on mathematics measures after the completion of developmental math coursework. In addition, the consultant will contribute to an understanding of qualitative aspects of students’ math learning.

The consultant will identify appropriate measures of mathematical learning and work with the ASDER research team to adapt these assessments to achieve the study’s research objectives. Adaptation of the measures will require interaction with faculty at the community colleges where data are being collected. The consultant should have knowledge of and experience with the following types of learning assessments.

- Curricular-based math assessments (i.e., items or tasks aligned with specific learning objectives of developmental math curricula)
- Performance tasks that ask students to demonstrate conceptual understanding of mathematical learning
- Think-aloud protocols that ask students to describe the process by which they approach and complete a math task
- Teacher ratings of the math proficiency of individual students on key learning objectives and other measures

Additionally, the consultant will provide guidance regarding pilot administration, refinement, and final administration of the math assessments, including necessary training for faculty and ASDER researchers administering various measures. The assessments will be developed during the 2012-13 academic year and administered during the 2013-14 academic year. Data will be analyzed in summer and fall 2014. More detail on project activities is provided in the timeline at the end of this document.

The consultant will be expected to serve as the mathematics subject matter and assessment expert across three major phases of the ASDER Learning Assessment study: *planning, administration,* and *analysis*. This work will be done in close collaboration with the ASDER research team and will require periodic participation in team meetings or conference calls.

**Planning:**
- Assist in identifying assessments needed to answer research questions
- Modify assessments selected for administration and create scoring rubrics, as appropriate
- Provide input on sample size and other methodological considerations
Administration:
- Train ASDER researchers and participating community college faculty to administer and ASDER researchers to score assessments
- Provide suggestions regarding changes to content and administration of assessments after piloting

Analysis:
- Assist ASDER researchers in interpreting assessment scores and triangulating with other data
- Provide suggestions on salient findings and feedback on written reports

For consideration, the math consultant should have:
- A master’s degree or doctorate in mathematics education, measurement and evaluation, learning and cognition, curriculum and teaching, or a related field
- A strong background in both the theory and the practice of assessment methods in arithmetic, pre-algebra, beginning algebra, and intermediate algebra
- Expertise developing, modifying, and administering learning assessments, including open-ended constructed response tasks, in classroom-based research settings
- Experience developing scoring rubrics across assessment types and analyzing assessment results
- Publications on the teaching and learning of mathematics and mathematical learning assessment
- Rigorous understanding of research design and methods related to measuring student learning
- Familiarity with postsecondary education contexts; in particular, community colleges and developmental mathematics *(preferred but not required)*

The consultant engagement is expected to require 15-20 days of work annually. Compensation will be commensurate with experience.

Candidates should send a CV and two examples of relevant publications to Dr. Susan Bickerstaff at bickerstaff@tc.edu.

**Project Timeline**

<table>
<thead>
<tr>
<th>Task</th>
<th>Timeline</th>
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<tbody>
<tr>
<td>Identify types of assessments needed to assess key learning objectives</td>
<td>Winter/Spring 2013</td>
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<tr>
<td>Adapt existing assessments to align with learning objectives</td>
<td>Winter/Spring 2013</td>
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<tr>
<td>Peer review of assessment tasks/items</td>
<td>Spring 2013</td>
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<td>Develop procedures for protocol administration</td>
<td>Summer 2013</td>
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<td>Pilot assessment tasks/items</td>
<td>Fall 2013</td>
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<td>Revise assessment tasks/items</td>
<td>Fall 2013</td>
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<tr>
<td>Administer assessments at research sites</td>
<td>Winter/Spring 2014</td>
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<tr>
<td>Data analysis and interpretation</td>
<td>Summer/Fall 2014</td>
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