

Exhibit D

Memorandum of Understanding Between Regional Education Lab-Mid-Atlantic and the XX School <Date>

This represents a memorandum of understanding between the Regional Education Lab-Mid-Atlantic (the Lab), Pearson, and the XX School to participate in a mutually beneficial research project to evaluate the Connected Mathematics 2® (CM2) program. This document clarifies respective roles and responsibilities and also delineates costs and commitments to sustain this federally funded project. The Lab, XX School, and Pearson (the developer of CM2 and related professional development) are making this agreement in good faith and with the expectation that the document will become binding. However, all parties recognize and acknowledge that final execution of the agreement depends on the U.S. Department of Education's approval.

BACKGROUND

The XX school will be one of approximately 70 to be included in an evaluation designed to address three research questions: (1) Does middle school students' use of CM2 as a comprehensive math curricula cause higher student math achievement compared to students who use other curricula (2) Does middle school students' use of CM2 cause higher levels of engagement in doing mathematics compared to students who use a traditional curriculum. This evaluation is authorized by the United States Department of Education's Institute of Education Sciences. The Lab is housed at the Pennsylvania State University, in partnership with Rutgers University, ICF-Caliber, Metiri Group and Analytica.

The advent of the *No Child Left Behind Act* (NCLB) of 2001 (P.L. No. 107-110) made clear the need to align standards, curriculum, instruction, and assessment goals with proven instructional practices in mathematics that use developmentally appropriate teaching methodologies that address the needs of all subgroups. In the critical area of improving achievement in middle school mathematics, CM2 was designed to combine National Council of Teachers of Mathematics (NCTM) curricula with authentic, relevant problem solving practices to help students build math skills in a useful multidisciplinary context. CM2 has been researched previously, but few of the studies met the standards of the What Works Clearinghouse. The primary reason was that they did not employ experimental designs that randomly assign students or groups of students (such as classrooms or schools) to an intervention group participating in CM2 and a control group not participating in the curriculum program. This study aims to address this problem and provide a measurement of the impact of CM2 in keeping with NCLB's goals of making educational decisions based on rigorous methods. In particular, this study is a cluster randomized controlled trial (CRT) of the effects of *Connected Mathematics 2*.

CM2 will completely replace your school's current 6th grade math curriculum. Teachers must complete five days of professional development prior to implementing CM2 in the classroom. Pearson, the developers of CM2, will provide the professional development for teachers to learn the curriculum and all of its components.

The study will rely on a random assignment design, the strongest possible design for obtaining unbiased and reliable measures of program impacts. Implementing this design requires, first and foremost, that there are eligible schools that are not currently using Connected Mathematics or CM2 and would like to participate in this study. The Lab will randomly select schools containing sixth grade math classrooms for the intervention (i.e., use CM2) and control conditions (i.e., carry out their math classroom as usual) from among those schools wanting to participate in the CM2 study. It is critical that schools stay within these conditions throughout the duration of the study. Switching conditions after assignment severely undermines the quality of the design. Any modifications must be discussed with the REL-Mid-Atlantic prior to implementation to determine whether or not the school may continue in the project. The study will be conducted during the 2008-2009 and 2009-2010 academic years.

A number of steps are required to implement this study. While most of the burden of study implementation falls on the Lab, there are certain responsibilities to be shared by the school staff; effort for which staff will be compensated. To foster a mutual understanding of what will be involved in participating in the CM2 study the following details the key activities.

1 – Protecting the integrity of the design. Each school either be assigned to an intervention or control condition. It is therefore important for school staff to understand that other schools in the district/state will have different ways of teaching math (some schools will use the CM2 program and others will not) within the sixth grade. It is important that control teachers are not given access to CM2 or related training materials until after the study is over.

2 – Notification to Parents and Students. The Lab will work with the school to inform parents, students, community members and other stakeholders of the study. The school will provide contact information for parents/guardians so that they are given a chance to remove their children from the study. Students removed from the study are not removed from CM2 or control classrooms; however REL-Mid Atlantic will not collect data on these students. In addition, students must assent to data collection (completion of Terra Nova and Student Math Interest Inventory pre and posttests). School staff should remain cognizant that students can refuse or stop testing at any time, for any reason and without penalty. The school will offer suggestions for how to promote participation in the study. This may include providing space for posters and notifications in school newspapers.

3 – Random Assignment. The Lab will work closely with school staff to implement random assignment, via computer. REL- Mid-Atlantic will make every effort to accommodate concerns, requests or questions including providing information and documentation of the assignment procedure. Control group teachers, and their students

will be asked to complete the same surveys as those who are in the program. Again, they may not use CM2 until the study has been completed, as this would impair the study design.

4 – Collecting initial (pre-treatment) achievement and engagement data. During regular math class time in the fall of 2009, the Lab will administer the math section of the TerraNova 2nd edition (CAT) Basic Multiple Assessment, and Math Interest Inventory to intervention and control students

5 – Teacher background surveys. A five-minute survey will be administered at the beginning of the study to learn more about teachers' experience with mathematics instruction.

6 – Accommodate observations of the treatment and control conditions. The lab will conduct a series of observations (about three per year) to document the use of CM2 and mathematics instruction in the control classrooms. Lab site visitors will observe classrooms of teachers in the intervention condition 3 times during the 2008-09 and 2009-10 academic year. Site visitors will observe classrooms of control teachers 3 times during the 2009-10 academic year. The Lab will schedule these meetings in coordination with principals and teachers.

7 – Collecting post-treatment data. At the end of the 2008-2009 academic year the Lab will administer a posttest using the Terra Nova and Student Interest Inventory with similar conditions as in the pretest.

8 – General information. School staff will provide general information about the school and make-up of each classroom and will fill out general consent forms.

9 – Incentives for the evaluation will be provided by the Lab to the School. It is the intent of the Lab to compensate the teachers in the intervention condition with high-quality professional development from Pearson, the developers of CM2. All teachers, intervention and control, will be provided either a laptop computer or a classroom LCD projector as an incentive for participation in the study. These devices will be purchased for the participating school and owned by the school or district. Schools or districts will agree to assign that device for the professional use of the participating teacher.

10 – Confidentiality of Data. Responses to this data collection will be used only for statistical purposes. The reports prepared for this study will summarize findings across the sample and will not associate responses with a specific district or individual. We will not provide information that identifies you or your district to anyone outside the study team, except as required by law.

11 – Training and Support. Pearson will provide professional development training and subsequent support in a manner that reflects typical implementation of CM2. Deviations from their normal implementation will be reported to the Lab.

PARTNERSHIP AGREEMENT

The signatures below indicate the agreement of The Lab, Pearson and School XX to engage in the research partnership described above. All parties believe that the responsibilities and effort as described above reflect reasonable judgments as to what will be involved in efficient and effective conduct of the research, and all parties agree that the compensation to School XX is fair and reasonable for their effort on behalf of this partnership.

Agreement with the Above Memorandum of Understanding

For Regional Education Lab-Mid-Atlantic

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DATE	DATE

For XX School:

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For Pearson:

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