

The Responsive Classroom Approach Increases the Use of Standards-Based Mathematics Teaching Practices¹

Erin R. Ottmar, Sara E. Rimm-Kaufman, Robert Q. Berry, & Ross A. Larsen

This study examines the impact of the Responsive Classroom® (RC) Approach on the use of standards-based mathematics teaching practices in third grade classrooms. Results show that RC teachers showed higher use of these standards-based mathematics teaching practices than non-RC teachers.

The Common Core Standards in Mathematics (CCSSI, 2010) provide a set of national mathematics teaching objectives that address content and process in the mathematics classroom. For example, students are expected to construct arguments, use tools appropriately and critique the reasoning of others.

For teachers, creating mathematical learning environments that apply these standards call on two inter-related teaching skills. The first is facilitating several mathematics instructional interactions involving selecting useful mathematical tasks, utilizing knowledge of mathematics, and promoting mathematical discourse in the classroom. The second requires orchestration of the social interactions between teachers and among students that promote learning. For students, succeeding in mathematics requires not only learning the prescribed content, but also developing the necessary social and self-regulatory skills that contribute to their mathematical understanding and ability to solve problems.

Many teachers struggle to implement the new standards successfully. Social and emotional learning interventions, such as the Responsive Classroom (RC) Approach, may help teachers better implement these standards in the classroom by providing teachers with strategies that enhance classroom social and instructional interactions.

The Responsive Classroom Approach

The RC Approach was developed by the **Northeast Foundation for Children, Inc.** and aims to improve classroom interactions and build capacity in schools, teachers, and students through emphasizing both social and academic learning.

Used by over 100,000 teachers, the RC Approach integrates a series of principles and practices, including:

- Morning meeting
- Rule creation
- Interactive modeling
- Positive teacher language
- Classroom organization
- Academic choice

The Study

This study asked: *Does the Responsive Classroom Approach affect the use of standards-based mathematics practices?* Researchers examined the impact of the Responsive Classroom (RC) Approach, on the implementation of standards-based mathematics

¹This research brief is based on the following published study: Ottmar, E. R., Rimm-Kaufman, S. E., Berry, R. Q. & Larsen, R. A. (2013). Does the Responsive Classroom Approach affect the use of Standards-Based Mathematics teaching practices?: Results from a randomized controlled trial. *The Elementary School Journal*, 113(3), 434-457.

This published study can be purchased at: <http://www.jstor.org/stable/10.1086/668768>

teaching practices within 88 third-grade mathematics classrooms in 24 elementary schools. Schools were randomly assigned to the RC condition or a control condition. Forty-three teachers received over 40 hours of training and coaching in the RC approach, while the 45 control teachers received no training.

Teachers completed an assessment of their Mathematical Knowledge for Teaching (MKT) and were asked to respond to online questionnaires about their math self-efficacy beliefs. Researchers also rated the extent to which they implemented RC practices in the math classroom. All teachers were observed teaching mathematics for three class periods throughout the year using the M-Scan to measure teachers' implementation of standards-based mathematics.

Findings

Impact of RC. Teachers trained in the RC approach were observed using higher levels of standards-based mathematics teaching practices than teachers in control schools, including:

- Higher levels of mathematical discourse
- Better use of and translation among mathematical representations
- Greater cognitive depth within lessons
- Greater coherence and accuracy of mathematical content

Fidelity of Implementation. Teachers who used more RC practices in instruction also implemented more standards-based mathematics teaching practices.

Other predictors of Math Practices. Higher math self-efficacy beliefs and teacher knowledge were related to higher use of standards-based mathematics

teaching practices. Also, Title I funding was related to greater use of standards-based mathematics teaching practices.

Practical Implications

These results demonstrate the positive impact of the RC Approach on the use of standards-based mathematics teaching practices.

Identifying and describing the mathematical challenges that teachers face in relation to using standards-based instruction represents an important step for improving math instruction. Providing strategies, tools, and resources that support classroom organization and behavior management may help teachers experience fewer barriers when using standards-based practices in their instruction. By explicitly teaching students' self-regulatory and social skills, teachers may be better able to facilitate mathematical discourse and promote challenging problem solving activities in the classroom.

In addition to ensuring that teachers develop the essential content knowledge necessary for teaching, training and professional development programs should provide ample opportunities for teachers to improve their day-to-day classroom practices and social interactions with children.

Overall, these findings lend support to the use of the social and emotional learning interventions, such as RC, for creating classroom environments that facilitate standards-based mathematical practices.

Acknowledgements

The research reported here was supported by the Institute of Education Sciences, U.S. Department of Education, through the University of Virginia Interdisciplinary Doctoral Training Program in the Education Sciences (grant R305B040049 and grant R305A070063). The opinions expressed here are those of the authors and do not represent the views of the U.S. Department of Education.

Additional Information

For more on the UVa Social Development Lab, go to: <http://www.socialdevelopmentlab.org>

For teachers interested in using the M-Scan to enhance standards-based mathematics teaching, see:

Merritt, E., Rimm-Kaufman, S. E., Berry, R. Q., Walkowiak, T., McCracken, E. M. (2010). A reflection framework for teaching mathematics. *Teaching Children Mathematics*, 17(4), 238-248.

Standard-Based Mathematics Teaching Practices Dimensions

The *Mathematics Scan (M-Scan)* was used to assess teacher's use of standards based mathematical teaching practices, including:

- Structure of the Lesson
- Multiple Representations
- Students' Use of Mathematical Tools
- Cognitive Depth
- Mathematical Discourse Community
- Explanation and Justification
- Problem Solving
- Connections and Applications