

Abstract

In much of the research on evaluating instructional materials, there has been a focus on fidelity of implementation assuming that the intended curriculum is represented in the instructional materials. However, administrators and teachers in large urban districts often create an intended curriculum as represented in a district pacing guide. This poster explores the implications of the design of a district curriculum pacing guide for *Connected Mathematics* in a large urban district, and the ways teachers used the instructional materials and pacing guide to enact instruction. Using the Surveys of Enacted Curriculum, a project designed CMP Implementation Survey aligned to the pacing guide, interviews with key stakeholders in the development of the pacing guide, and document analysis including of the pacing guide and the instructional materials, we frame the pacing guide as a boundary object used by the district to align instructional materials with broader expectations including state standards, assessments, and their own beliefs about the importance of particular mathematics. At the same time, we describe how teachers responded to the pacing guide by exploring their use and modification of the instructional materials in light of the pacing guide. We conclude with implications for the design of district pacing guides and professional development of teachers.

Research Questions

How does an urban district use a pacing guide (DPG) to support teachers enactment of district adopted Standards-based instructional materials to attempt to meet the needs of students?
How do teachers in an urban district use and adapt district-adopted Standard-based instructional materials to attempt to meet the needs of their students?

Significance

The key issue in mathematics education reform is the instruction, and the instructional materials are a tool in improving the instruction, not a reform in and of themselves. The district is a key mediator in the enactment of curriculum materials in urban districts, further making “fidelity of implementation” a problematic construct in studying instructional materials implementation and effectiveness(Chval, Chavez,Reys, & Tarr, 2009; Post et al., 2008; Tarr et al., 2008).

Theoretical Framework

- DPG, delineates scope and sequence of the instructional materials to align with the state’s content expectations (O’ Shea, 2005) is a boundary object in curriculum implementation policy (Cobb, 2003; Wenger, 1998)
- Instructional materials, along with state standards and DPG are cultural tools that teachers use to design instructional encounters with students (Cole, 1996; Wertsch 1985; Remillard, 2005)

Methods

159 teachers that teach middle school mathematics to grades 6 – 8 (included 41 special education teachers and ELL teacher) across 39 schools in Newark, NJ Public Schools completed two surveys via on-line administration in March and May 2009. The two surveys: the Surveys of Enacted Curriculum (Instructional Practices [SEC-IP] and Instructional Content [SEC-IC]) (Council of Chief State Officers & Wisconsin Center for Education Research ,2008; www.seconline.org) and a project designed CMP Implementation Survey (King & Phaire, 2008). Interviews with stakeholders in the development of the DPG and a document analysis of the standards, instructional materials, and DPG for alignment using SEC alignment metrics

Results DPG

- Intended Curriculum (DPG) can depart significantly from the materials
- Development of DPG not simple process solely dependent on alignment with state standards/assessments (See table for 7th grade alignment indices for CMP and with DPG to NJ State Standards; <.25 is considered low alignment)

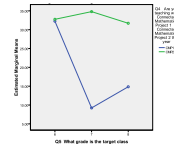
| CMP2 Instructional Materials Sequence | SEC State Standards Alignment Index | District Pacing Guide Sequence | SEC State Standards Alignment Index |
|---------------------------------------|-------------------------------------|------------------------------------|-------------------------------------|
| Variables and Patterns | .23 | Bits and Pieces III (grade 6 unit) | .36 |
| Stretching and Shrinking | .49 | Variables and Patterns | .23 |
| Comparing and Scaling | .44 | Stretching and Shrinking | .49 |
| Accentuate the Negative | .33 | Comparing and Scaling | .44 |
| Moving Straight Ahead | .17 | Data Distributions | .17 |
| Filling and Wrapping | .33 | What Do You Expect? | .19 |
| What do you Expect? | .19 | Accentuate the Negative | .33 |
| Data Distributions | .17 | | |

•Several factors must be negotiated that may conflict or produce tension with the state content expectations and assessments

Decision Making Factors

- Alignment with State Standards and Assessments
- District Vision of Mathematics
- Student Histories
 - Computation
 - Resist acceleration to formal Algebra before algebra readiness
- What about the mathematics?
 - Decreased the coherence of the mathematics curriculum particularly at Grade 7
 - Statistics – Incomplete picture of distributions by removing variability and only attending to measures of central tendency

Percentage of Use without Modification by CMP Edition



The district had been using CMP1 for several years and had only introduced CMP2 throughout the district in the 2008-2009 academic year. Thus, teachers were more familiar with CMP1, so may have made more modifications knowing the strengths and weaknesses of the materials. Also, as CMP2 is a revision of CMP1, the second edition may address the weaknesses these teachers perceived in CMP1, which led to more adaptation and modification.

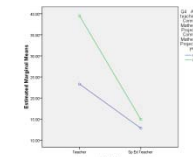
Aligned Units

- Percentage used without modification ranged from 7.1% for *Stretching and Shrinking* to 44.0% for *Data Around Us* in CMP 1
- Percentage used without modification ranged from 20.8% for *Looking for Pythagoras* to 41.9% for *Stretching and Shrinking* in CMP 2
- Each unit was adapted or used as one of many resources more than it was used as is.

Moved and Not Taught Units

- Approximately 34% of 7th grade teachers taught *Moving Straight Ahead*, which the NPS pacing guide moves to 8th grade
- The other units not-to-be-taught were not taught by the majority of teachers, and generally modified when taught.

Special Education versus General Education Teachers' Use without Modification



Special education teachers are significantly less likely to use the materials without modification than their general education teacher colleagues. We concluded that the effect likely is attributed to the teacher rather than the class achievement levels.

Conclusion

We need to understand more about the development of district pacing guides and other implementation tools that district administrators and teachers use to understand the intended curriculum to situated the enacted curriculum.
 •The district is balancing a need to align with the state standards and assessments, which are not always well developed, with their own vision of mathematics for the district and policy realities, such as students’ histories and teacher capacity.
 •The teachers are balancing a need to be faithful to district policy and the curricular materials, which are not always aligned, and their own goals and instructional realities, such as students’ histories.
 Without accounting for the role of district policies, such as seen here in the pacing guide, interpreting teachers’ fidelity of implementation is difficult.

Further analyses underway are linking these results to students’ achievement and alignment of the intended curriculum, enacted curriculum, standards, and assessments.

For More Information:

Karen D. King, PhD (Principal Investigator)
karen.d.king@nyu.edu
<http://tusim.karendking.com>

This material is based upon work supported by the National Science Foundation under Grant No. DRL-0732184. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the authors and do not necessarily reflect the views of the National Science Foundation.