

Choosing Mathematics Curricula: Comparing State Adoption and Open Territory States

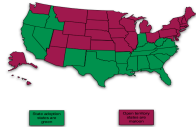
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Effective Use of Mathematics Instructional Materials: Building Bridges between Research and Practice (An NSF-Funded Project)

Project Description

The project combines applied research investigating curricular decision-making with resource development to improve curriculum leaders' access to and use of research on mathematics curricula. The resources will provide opportunities for curriculum leaders to explore how research can inform their decision-making processes, and challenge them to identify additional areas where more research is needed.

State Adoption & Open Territory Map



Portrait of an Adoption State

- Everyone selects at the same time
- State math leaders create a list of designated materials for each grade level from which schools and districts must choose in order to make use of their state funds
- Lists vary from having a broad range and almost unlimited amount of choices to having just a few choices at each grade
- There is a tendency for schools and districts to assume that texts appearing on the state list have already been reviewed with the state standards and testing in mind
- The selection process (committee make-up, piloting etc.) is often dictated by state policy



Louisiana

- State adoption 2005
- 68 parishes, many rural
- Comprehensive Curriculum introduced 2005; viewed as primary, text as resource



Texas

- State adoption
- One of "big three" purchasers
- 1,229 districts, over 4 million students
- TEKS (Texas Essential Knowledge and Skills)
- TAKS (Texas Assessment of Knowledge and Skills)

West Virginia



- 2005 state adoption with wide-ranging list
- 55 counties, mostly rural
- Influence of Project MERIT; all counties adopted NSF materials to some degree at middle school
- Push from state for NSF-funded at elementary

Goals

- To better understand decision-making related to selecting and implementing mathematics instructional materials
- Particularly, to understand curriculum leaders' needs for research that informs that decision-making
- To increase the understanding in the field of those needs
- To develop tools for leaders based on that understanding

Portrait of an Open Territory State

- No official state lists; in some states the DOE may produce alignment documents that provide data on how well specific materials match up with state tests, etc.
- State has limited role or no role in curriculum selection and may be prohibited by law from making any recommendations
- Districts tend to adopt on a cycle but may also select off cycle because of other driving forces
- Because districts adopt at different times, curriculum selection is often affected by what other similar districts are using who have high levels of achievement
- In theory, there is the potential for a wide range of materials to be in use across the state, according to the various needs of the different districts

Colorado

- Open territory
- 15 of 180 districts have 80% of students
- Majority rural districts
- No content specialists at state level



Maine

- Open territory
- 220 school districts
- Mostly rural
- Maine Learning Results to become law Feb 2007

New York

- Open territory
- 216 school districts
- MST Learning Standard 3: Mathematics was revised by the Board of Regents in 2005



Ohio

- Open territory
- 612 districts
- "Big 8" and "Urban 21" mixed with many rural districts
- One of "big 5" purchasers of materials
- Strong informal math leader network in state

Washington

- Open territory
- WA BoEd reviewing state standards
- Legislature considering menu of approved materials for low-achieving districts
- Active "Where's the Math" organization in state



Research Questions

- What processes do districts use in choosing mathematics curriculum materials?
- Do the processes used in state-adoption states differ from those in states with open textbook adoption? If so, in what ways?
- What factors shape district curriculum decisions in K-12 mathematics?
- How do curriculum leaders use research in their work? How does research influence district leaders' decisions to adopt or implement mathematics curriculum?
- What research do curriculum leaders find most useful? What forms and formats make research accessible to and usable for practitioners?
- What questions about mathematics curriculum do decision-makers need answered most?

Methods

- Interviews
 - 100 Interviews with mathematics curriculum leaders in 8 states (approximately 75 completed so far)
 - Mix of adoption and open territory states with adoption in Fall of 2005-2007
 - Curriculum use: both commercially and NSF-funded materials
 - 45-60 minute interviews, taped and transcribed
 - Focus on process

ASSM Survey

- 49 of 50 states and the District of Columbia responded (missing CA)
- Responses primarily from state mathematics specialists
- Surveys of a Curriculum Consultant Network
- Case Studies

Emerging Themes

Advocacy & Neutrality: Curriculum leaders in both adoption and open territory states appear to purposefully choose a stance of neutrality or a stance of advocacy at some point in the selection process

Committed to a Neutral Process

"And I told them that was not my objective, that I was not saying which way they needed to go with that. ... Now, they had some debates within their groups, but I stayed out of them. I did hear that in the discussions. But again, I stepped aside from that. I let them have that discussion. I was not going to facilitate that."

Now did you have a particular direction you were hoping things would go?

"No. And here it is. You go for it. Tell me what you want. They eventually, by secret, made their vote. And when they made their vote, I tallied the vote and reported it back to them. And that was what we sent forward to the Board, to say these are the books that will be recommended for adoption in XXX Parish."

~ Math Supervisor, State Adoption

Neutral Unless Unsatisfied with Choice

"Well, I always tell them that their decision is one of recommendation, but not final decision. They make recommendations, but they don't make the final decision. But in every case, if I agree with what they want to go with, I mean we just go with it. And if it doesn't agree with what I want to go with, I can pull strings a little. Like for instance, when we were doing Program A, there was quite a tie between Program B and Program A. And I did not want Program B, because I knew how much independent prep was required and how much conceptual knowledge that teachers needed in math, and they needed to learn it. Where I felt they could learn the conceptual knowledge they needed by teaching Program A because it's so scripted. So when it was close, I sort of cast the deciding vote to go with Program A."

~ K-12 Curriculum Director, Open Territory

Advocacy Throughout Process

"My style is not to do the old style where we bring in seven publishers and they all get 20 minutes with the staff, and then we vote. We don't do that anymore.

... Because I've been through that. Personally, I don't believe it works, and here's why. Number one, it's my position to be out and about, and doing research. So I have the responsibility in my position to find out what is working with kids, what is aligned with best practice research. Then I need to inform and educate my staff. They don't have time to do all of that; that's my role.

... When I do that, they understand why it's either a decision between two choices, which are similar, or here's a choice. ... They are made very much aware of what this is and why it is. And then we go around the table and there needs to be consensus there. And we've always got consensus, but it's not a voting, and let's pick up the books, and the prettiest cover."

~ Curriculum Supervisor, Open Territory

Role of Research: Research includes comparing textbooks to state standards, consulting "expert" sources, and looking at similar districts

State Standards

"In our state, because the state tests and standards, we knew we needed a more problem-based approach for mathematics anyway. So that was the easiest way. ... But we knew we were headed that direction, it wasn't like we needed any convincing.

... Plus, it was the only exemplary material at the time, according to the AAAS at middle school."

~ Math Specialist, Open Territory

"Well, I tried to help them make a data based decision. One of the things that happens is that for a book to get on the list approved by the state, it has to address 80% of the CSOs. ... When do I have to address regrouping or subtraction to get a check in that box? So it's still real subjective, okay.

But I did provide that data through the textbook committee, and copies for every teacher of the data that the state provided on the series that at least met my standard to lean us toward standards-based math.

~ Director of C&I, State Adoption

Districts Like Us

"I also did an extensive amount of calling of other districts. ... I started calling many districts and trying to get information about implementation, effectiveness, how happy they were with them, et cetera.

~ Mathematics Curriculum Specialist, Open Territory

"Yeah. We're a Title I, little over 40 percent of our population is Hispanic. I would say 70 percent of our kids are on free or reduced lunch. And so I've requested of XXX to send me data in regards to students who are demographically in the same."

~ Teacher Leader, Open Territory

Our Assistant Superintendent at that time went through the state test scores of all the districts in the state, and then they did a survey of those districts to see what program they were using at their elementary school."

~ Assistant Superintendent, Open Territory

Expert Sources

I will trust places like NSF, on websites I go to. And also the Science 21--*Project 2061?* Yes. I guess I have to believe in the National Reading Panel, if I'm looking at reading. I have to believe that there are people who have spent years on researching. So I trust some of those. And then my second level is, who's using this now and how successful are you?

Curriculum Supervisor, Open Territory: What has shown us things. ... We read several books from NCTM and articles out of Educational Leadership. Helping Children Learn Mathematics was one of the resources. I had four articles for them to read that talked about children learning mathematics. ... What is current research saying.

~ Mathematics Coordinator, State Adoption

ASSM Survey Results

- Role of the state in district textbook decisions**
 - Adoption: Affects district selection criteria and timing of decisions
 - Open: Little to no direct role in selection process
- Most influential factors in the selection process**
 - Aligns with state math standards and tests
 - Student achievement results

Hypotheses to Date

- With the onset of NCLB and increasingly demanding issues of accountability the landscape has changed in the last five years
- State context, particularly state standards and tests, matters for both state adoption and open territory states
- Alignment with state standards is the most pressing concern for districts when choosing materials
- The curriculum leader may position herself within the process to advocate for a particular perspective or curriculum
- Statewide adoptions may limit districts in adoption states from gathering data from "districts like them"