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Start at Square One

Which Way Will You Effect Change in Our Profession?

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Purpose Statement

The purpose of the National Journal of Mathematics Education Leadership is to advance the mission and vision of the National Council of Supervisors of Mathematics by:

- Strengthening mathematics education leadership through the dissemination of knowledge related to research, issues, trends, programs, policy, and practice in mathematics education

- Fostering inquiry into key challenges of mathematics education leadership

- Raising awareness about key challenges of mathematics education leadership, in order to influence research, programs, policy, and practice

- Engaging the attention and support of other education stakeholders, and business and government, in order to broaden as well as strengthen mathematics education leadership

Unchartered Territory: Using the *Curriculum Focal Points* as a Basis for Designing State Standards

Juli K. Dixon
University of Central Florida
Gladis Kersaint
University of South Florida

According to Fennell (2007/2008), there is evidence to suggest that the *Curriculum Focal Points* (CFP) are receiving widespread attention "in boardrooms, schools, school districts, and state departments of education" (p. 315). Fennell reported that "over one-fourth of the states and many local school districts have decided to use NCTM's *Curriculum Focal Points* to drive discussion about what's important in pre-K-8 mathematics curricula" (p. 315). The purpose of this article is to share one state's experiences with this endeavor.

Florida decided to use a two-phase process to revise its mathematics standards. First, a committee was convened that included representatives from various stakeholders (e.g., K-12 teachers, K-12 mathematics supervisors, mathematicians, and mathematics educators) to hear presentations from experts in the field about the current standards, issues related to those standards, and to establish a framework for the design of the new standards. This committee recommended that the CFP be used as the foundation for the new K-8 mathematics standards. Following this meeting, another committee was convened to write the new standards. This committee represented the same set of stakeholders and was charged with the task of actualizing the intent of the CFP within a set of grade-level specific standards. This represented a significant shift from the current state standards written in 1996 that were organized by grade bands, following the organizational structure of the Curriculum and Evaluation Standards for School Mathematics (NCTM, 1989). The goals of the new standards were to increase the rigor, coherence, and clarity of the K-8 standards while at the same time eliminating redundancy and reducing the number of standards that are addressed at each grade level.

As the writers engaged in the process of translating the intent of the CFP into a standards document, they discovered many issues that needed to be addressed in order to help teachers and the general public understand the nature and intent of the suggested changes. As members of the writing team, we felt that it might be important to share these issues as a means to guide others who may find themselves in a similar circumstance. The writing team was in uncharted territory because Florida was the first state to initiate this process. We could not rely on or consult others about the best approach for engaging in this work based on their experiences. Although teachers and administrators appeared to embrace the new directions for K-8 mathematics, including the need to reduce the breadth of the curriculum to focus on fewer topics, many issues related to the new standards were left unanswered and needed to be addressed by the writing team. In this article, we share the experience of the standards writing team with using the CFP as a foundation for revising state standards and discuss issues to be considered by those who might engage in a similar endeavor.

Organizing the Standards: What Should They Look Like?

The writers debated the appearance of the new standards. In particular, writers grappled with whether the new standards should be organized similarly to the CFP or use some other organizational structure. Initially, some of the writers argued that the new standards document would work in conjunction with the current 1996 Florida standards document, in the same way that the CFP builds on and enhances the Principles and Standards for School Mathematics (NCTM, 2000). That is, the new standards

document would identify key mathematics ideas to be addressed at each grade level. In this way, it would be a supplement to the standards document currently in place. However, the state department of education indicated that a new standards document would be developed. The new document would replace the 1996 standards document and needed to stand alone on its own merits. Ultimately, the decision was made to organize the Florida standards for grades K-8 around three Big Ideas per grade level. These Big Ideas reflect the intent of the grade level curriculum focal points in the CFP with Supporting Ideas for each grade that include the content discussed in the connections to the focal points. The Supporting Ideas serve three purposes: 1) to establish connections to and between the strands of mathematics as defined by NCTM (2000), 2) to prepare students for future mathematics teaching and learning, and 3) to address gaps in instruction that are important to the understanding, fluency, and application of mathematics ideas to problem solving. In this way, the curriculum remained focused on important mathematical ideas while including connections to other important mathematics and prerequisites for future topics. (The new Florida standards are available at www.fldoestem.org).

Another area of debate was where Algebra 1 would be taught for the majority of Florida's students. As a means to increase the rigor of the mathematics curriculum, some wanted 8th grade Algebra 1 to be the norm for most students. Others, however, were concerned about the preparation for such a change. Many wondered whether it was appropriate to expect that all students would be prepared to take and succeed in Algebra 1 in the 8th grade when there were challenges associated with Algebra 1 currently offered to the majority in the 9th grade year. This discussion was important because the decision made would influence whether there was a need to move some of the topics identified in the Grade 8 Focal points into earlier grade levels. After much debate, it was determined that Florida was not yet ready to implement Algebra 1 at the 8th grade level for all students. Included among the discussions were issues related to the preparation of middle school teachers to teach Algebra 1. After much debate, the decision was made for the standards to address three general mathematics courses at the middle school level; however the 8th grade courses would emphasize algebraic thinking and reasoning.

The writers also had to address the issue of instructional goals versus learning objectives. As part of the CFP document, NCTM states,

> These curriculum focal points should be considered as major instructional goals and desirable learning expectations, not as a list of objectives for students to master. They should be implemented with the intention of building mathematical competency for all students, bolstered by the pedagogical understanding that not every student learns at the same rate or acquires concepts and skills at the same time (2006, p. 10)

However, how might these instructional goals be reframed so that they address learning objectives? How do the writers make sense of this information in ways that allow teachers to make sense of the standards in the spirit in which it was intended? Among all of the complexities associated with developing standards, this was one of the most challenging. The writers continually grappled with how the *Curriculum Focal Points* were being used. In particular, members of the writing team debated whether we were honoring and correctly interpreting the messages outlined in the document. In particular, we wondered whether we were debasing the intent of the CFP because we were attempting to identify particular learning objectives from statements of instructional goals. When there was a debate, decisions were more often than not guided by the information provided in the CFP.

A Line of Demarcation Between Standards Development and Implementation

Writers were often reminded that the development of the new state standards should be considered a separate process from the implementation phase. However throughout the writing process, questions were raised regarding the implementation of the new standards, including the placement of topics, which topics to include or exclude, and how the standards

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would be interpreted for use. Specifically, how do we communicate the intent of significantly changed standards to large numbers of teachers and insure that they are interpreted as intended? How do we address the transition period where there might be inconsistencies between learning expectations from the previous standards and the new standards as tested on high stakes assessment? Each writer came to the table having had discussions with other stakeholders who either lacked an understanding of the intent of the CFP or misinterpreted provided information. It was felt that the issues of implementation had to be considered at this stage. Thus, the writing team discussed implementation issues while deciding how to address topics where consensus had to be negotiated. Two important implementation issues were constantly revisited throughout the writing process and are discussed below.

Narrowing the Curriculum, Increasing Depth: How Do We Communicate the Intent?

In general, the education community supported the need to reduce the breadth of the curriculum to focus on fewer topics. However, some teachers do not have a clear understanding of what is meant by developing depth of students' knowledge. These teachers initially embrace specific standards; but they grapple with the particulars of implementation. By design, not all mathematics topics are addressed in the CFP so writers had to address how teachers would interpret particular topics not included as part of the standards. What do you do about topics, such as absolute value, that are not addressed within the CFP? Where are topics placed that need to be taught but might not fit clearly with a "big idea" or a "supporting idea" in any given grade, such as telling time? How do you maintain focus on "Big Ideas" while addressing topics that are deemed important to the curriculum but are not "focal points"? How do we communicate how mathematics knowledge is developed over time and across grade levels?

As part of the writing process, a draft of the new standards underwent public review. The comments provided during the review period shed light on issues that needed to be addressed through revisions of the standards as well as on issues that needed to be addressed through professional development on the new standards. Overall public comments shared during the public review indicated support for the new K-8 standards. However in some cases, comments revealed a lack of understanding regarding the intent of the standards and with regard to particular standards statements. To clarify the intent of particular standards, the writing team prepared a set of "remarks" that further elaborated the standards and benchmarks. The remarks were created as a separate document from adopted version of the standards. In this way they could be a fluid document that can be altered as more information is gained as the new standards are implemented. The remarks will be made available as the standards are implemented. The purpose of the remarks are to: 1) clarify what is described in the standards, 2) provide context to be addressed as part of the standards, 3) provide examples of the types of problems the standards address, and, 4) provide content limits when appropriate

When striving for depth versus breadth in curricular topics, it becomes necessary to make decisions about where to teach topics and where to reduce redundancy in order to allow for a focus on depth of understanding. The writing team often discussed the intent of particular standards and whether readers would understand that the intent was to develop students' understanding rather than focus on particular procedures. A member of the Florida Department of Education shared a reaction by a teacher during an open forum regarding the new Florida standards. The teacher looked at the short list of curricular topics in a grade and said, "I can teach this in 20 days; what do I do the rest of the year?" Although this comment may cause a jarring reaction, when we consider the list of topics from the perspective of a teacher who has taught a new topic every two days in the past, this teacher's misperception is not so far fetched. (Florida has had as many as 93 grade level expectations to be taught in a given year (Reys, 2006).) A concern was also expressed about how the new standards moved topics from year to year. Teachers are protective of the topics they teach. Consider a fourth grade teacher who has successfully taught a mathematical topic in the past examining the new standards and finding that this topic has been moved to grade 6 such as determining the mean, median, and mode(s) of a set of data. He wonders, "Why would they move it? Clearly the students could do this work." In contrast another teacher wonders why a topic has been moved to an earlier grade, "This is too difficult for my students." Indeed, these teachers cannot reconcile what they have done in the past with new goals and expectations. It was obvious that in conjunction with the introduction of the new standards professional development was needed to help teachers come to understand what is meant by facilitating "deep understanding, mathematical fluency, and an ability to generalize" (NCTM, 2006, p. 5).

Although the writing team recognized that the standards were statements about the nature of the mathematics to be taught, they found that readers interpreted these statements through the lens of classroom implementation. That is,

readers had difficulty separating the description of the mathematics from how that mathematics might be taught. Because of this, writers continually grappled with methods for conveying the message in ways that would be clear. Florida is addressing this issue with widespread professional development throughout the state. The Florida Department of Education is providing workshops and meetings across the state to share the new standards and their intent. Large grants are being funded to broaden these efforts relative to preparing practicing and prospective teachers with the content and pedagogical content knowledge necessary to teach according to the intent of the new standards.

Unpacking Lingo: Do We Agree on the Meaning?

The language used in mathematics education evolves and develops meaning within the community. As a result, we make assumptions about what meanings might be taken as shared. As writers engaged in the collaborative work of developing state standards based on the CFP, they discovered that other educators did not share those same meanings. It was necessary to negotiate meanings and attempt to reach consensus among all stakeholders regarding the intent of the language in the CFP, even within the writing team. For example, many stakeholders and some writers did not understand the purpose of the vocabulary "compose" and "decompose." Some had no idea what the terms meant while others felt that the terminology could be simplified into the more common lay terms, "put together" and "take apart." In some cases, teachers wondered whether students were expected to learn this vocabulary. One teacher shared, for example, that administrators in her district require that teachers post on the board the standards being addressed in class each day. Therefore, for the standard to have meaning to her students the teacher would be required to define difficult, and sometimes unnecessary vocabulary. The writing team had to come to terms with their position on the need for students to learn all language embedded in the focal points. Overall, the writing team decided that the audience for the standards document is teachers and other adults. Students are responsible for learning the mathematics and that teachers and districts were responsible for communicating with students in ways that are grade level appropriate. In many instances, the language of the CFP was included in the standards document. Because some of this language is different from language used in the previous standards document, the Florida Department of Education is in the process of creating a glossary to help teachers, parents, and administrators make sense of this terminology.

Conclusion

According to NCTM, "Curriculum Focal Points for Prekindergarten through Grade 8 Mathematics provides one possible response to the question of how to organize curriculum standards within a coherent, focused curriculum, by showing how to build on important mathematical content and connections identified for each grade level, pre-K-8" (2006, p. 3). However, using this document as the basis for developing state standards requires attention to issues that may arise as a result of such use. How you choose to answer the questions posed above should depend on the specific needs of the students and teachers in your state. In our journey, questions included those that focused on organization, intent, and language. At the time of this writing, Florida has now begun to address the implementation of the standards. Emphasis has been placed on providing professional development that is fluid enough to meet the changing needs of teachers and districts. Like issues identified during the standards writing phase, we anticipate that others will be identified that relate to implementation. We encourage others to share their stories along with insights gained from their experiences as other states initiate discussion related to the use of the CFP.

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