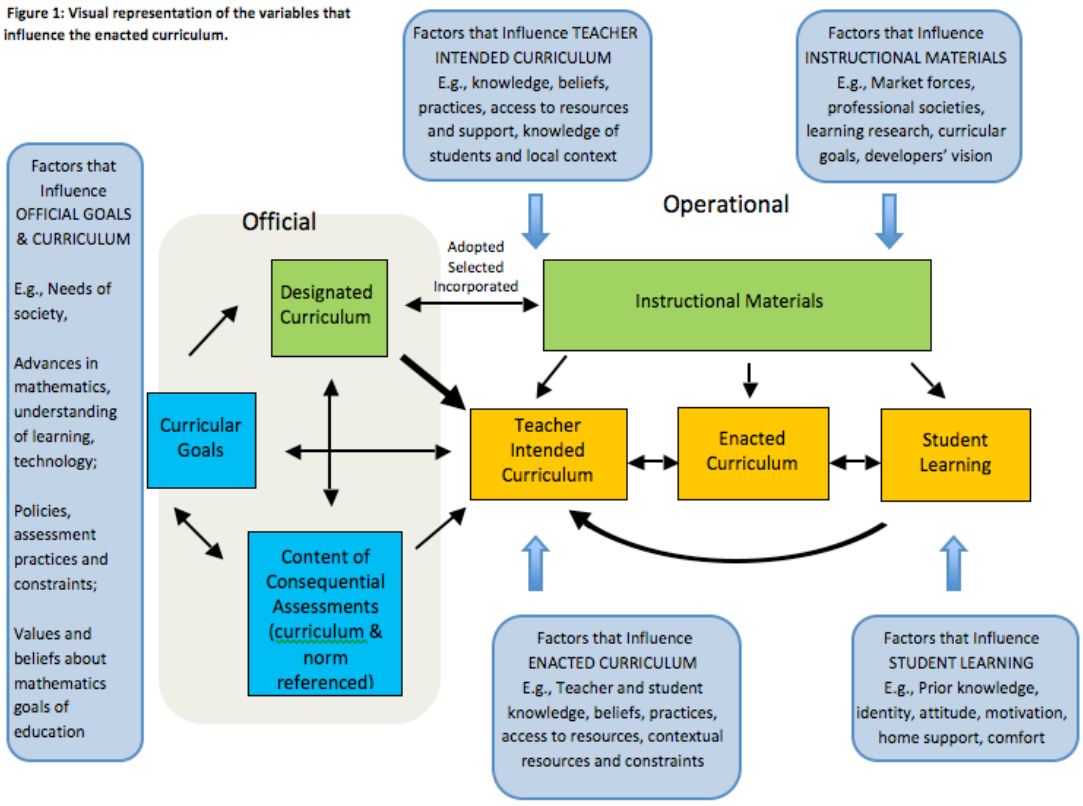
Influences on the Enacted Curriculum

The framework shown and described below was developed by CSMC associates at a conference on researching the enacted curriculum in November, 2010. It is currently undergoing revision by Janine Remillard and Dan Heck and will be published in a forthcoming issue of ZDM.



Curriculum design, designation, and implementation are all part of a complex process by which curricular intentions are conceptualized, adopted, substantiated, and enacted in the classroom (Ben-Peretz, 1990; Stein, Remillard, & Smith, 2007; Valverde, et al., 2003). This process is influenced by a variety of mediating factors and forces that shape and reshape what is considered *the curriculum* along the way and influence its outcomes. Our aim is to develop a conceptual framework of the enacted curriculum that provides a map of the terrain, describes and defines key constructs, and identifies critical relationships among these constructs that together make up the phenomenon. Doing so, we found, required that we situate this work within the entire, multi-phase process. Our goal in mapping and conceptualizing this complex set of relationships is to offer the field a shared language to guide research design and allow for comparison and combining of studies to accumulate knowledge and generate new hypotheses.

We began with the Center for the Study of Mathematics Curriculum's Research Framework (http://www.mathcurriculumcenter.org/research_framework.php), which captures components of the implementation process and the "forces" that influence it,

and then built on its attention to and identification of three distinct kinds of variables at play: a) curriculum in its many forms; b) contextual and human factors that influence the process; and c) on-the-ground players in the actual enactment—teachers and students. Through our discussions, we made distinctions, defined terms, and specified relationships that are not clearly delineated in most frameworks, but if illuminated would likely paint a clearer picture of the curriculum enactment process and identify important foci for research and policy analysis. In that sense, we focused our discussion on the variables at the center of the framework listed under a and c above. The framework draws on existing research and the experience with a wide variety of educational settings in the U.S. We did not have sufficient time to discuss the influencing factors in any detail, although we acknowledge that they, too, are critical to understand.

Defining Curriculum

We start by defining curriculum. Drawing on curriculum scholars (Caswell & Campbell, 1935; Jackson, 1992; Oliva, 1982), we define curriculum as *a plan for the experiences that learners encounter and the actual experiences designed to help them reach specified learning goals, in this case for mathematics.* We have specified "for mathematics" for two reasons. First, as mathematics educators, we acknowledge that our focus is limited to the mathematics curriculum, although we believe that this framework would benefit from scrutiny and feedback from scholars in other fields included in the school curriculum. Second, we recognize that the school curriculum, even when focusing on mathematics, is not and should not be attentive to mathematics learning goals alone. As social institutions, schools have multiple purposes and responsibilities, and we wanted to make clear that our focus was not to be considered as all inclusive. Our definition of curriculum is not limited to the specified outcomes of instruction; it intentionally includes the specification of what many might call instructional plans.

A Note on the Model

The model in figure 1 provides a visual representation of the variables that influence the enacted curriculum and the relationships among them. The blue boxes with rounded corners around the perimeter refer to contextual and influencing factors. The rectangles in the model refer to curriculum variables, or curriculum in its many forms. These variables include curriculum plans as defined above (i.e., the designated curriculum, the curriculum outlined in instructional materials, and the teacher intended curriculum), curricular goals, and the enacted curriculum. The student-learning variable is an oval because it is not a curriculum variable, but a curriculum outcome. The variables are given different colors to distinguish their role in the system. Blue indicates curricular goals. Green and yellow indicate different types of planned or experienced curriculum. Green is used to designate written curriculum. Yellow is used to specify classroom-level and teacher-level enactments—the curriculum intended or planned by the teacher and the curriculum actually enacted in the classroom.

The Official Curriculum

In the framework, we distinguish between the curricular elements that are officially sanctioned and those that are not sanctioned, but operationalized through practice. The official elements of the curriculum are specified or adopted by authorizing entities for a

particular locale or institution and include: curricular goals, content of assessments, and the designated curriculum.

Curricular goals are the specified learning outcomes often set by a state, school district or school. These are statements of what students should ideally learn as a result of instruction. We call them *curricular goals* because they are aimed at shaping the curriculum. We acknowledge that curriculum is driven by both explicitly stated and often implicit goals.

Curriculum is also shaped by the content of official assessments that students must take. Some of these assessments are curriculum referenced in that they reflect the stated curricular goals and are designed to assess students' achievement of these goals. Here, it is important to note that any curriculum referenced assessment represents one particular instantiation of these goals, reflecting the interpretation embraced by those constructing the test as well as constraints of the particular test. Official assessments can also include norm-referenced tests, which are not designed to reflect the designated curricular goals, but are influential, nonetheless, because students are required to take them. These might include, but are not limited to, international and nationally administered assessments, state tests, benchmark assessments, and end-of-course exams, as well as a variety of aptitude, diagnostic, and placement tests. These required assessments influence the curriculum because they denote the content that is actually tested in efforts to represent students' progress, achievement, or readiness for future educational experiences. Because these tests often carry serious consequences for students, teachers, and schools, there is a sense of obligation to prepare students for them. In some cases, these assessments might also influence the official curricular goals either because, over time, knowledge and skills assessed on norm-referenced tests might be incorporated into official curricular goals, or because there is an expectation that official curricular goals are written in terms that match what can be tested in these forms.

The designated curriculum is the set of instructional plans specified by an authorized entity for a particular locale, be it a district, school, or consortium of schools. The designated curriculum is generally informed by the official curricular goals and is intended to offer guidance toward addressing these goals. However, during periods of high accountability, the designated curriculum is even more likely to be influenced by the content of assessments that students take and for which schools and districts are held accountable. The designated curriculum can vary in its form and degree of specificity. In many contemporary school settings, the designated curriculum includes the scope, sequence, and pacing of instruction of the content, the curriculum materials and resources to be used, and possibly formative and summative assessments to be employed. While in the past, the designated curriculum might have simply comprised an adopted mathematics textbook, today's designated curriculum is typically made up of a host of assembled packages of materials, instructional resources, and structuring guidelines designed to shape the content, pacing, and often the processes and tools of mathematics instruction. Instructional materials, shown outside of the official domain, become part of the official curriculum when they are designated as an adopted or required resource.

Teachers are the primary intended audience of the designated curriculum and, in most instances, the designated curriculum serves as teachers' primary instructional resource and guide. Nevertheless, the two other components of the official domain, adopted

curricular goals and the content of consequential assessments, are likely to influence the teachers' curricular decisions directly (as well as indirectly through the designated curriculum). These differences in the likely intensity of influence are represented by the thickness of arrows in the framework but need to be developed empirically for each setting/circumstance.

The Operational Curriculum

When put in the hands of teachers, the official curriculum, as conveyed through the designated curriculum, begins to change forms, moving from descriptions of instructional activities toward actual classroom interaction. As teachers draw on the designated curriculum along with other resources to design instruction, they create what we call the *teacher intended curriculum;* it includes the interpretations and decisions made by the teacher in order to envision and plan instruction. This form of curriculum, like those previously discussed, remains composed of projected possibilities for classroom instruction. At the same time, it has more texture and detail than the previous forms; it is designed for specific students at a particular moment in time and is ready to come alive in the classroom. This form of curriculum is also the most difficult to access in order to study because it exists in its most detailed state in the teacher's mind. Lesson plans can be used as artifacts of the teacher's plans, but they are unlikely to capture much of the multi-dimensional nature of a planned lesson as fully imagined by the teacher. The difference between the designated and teacher-intended forms of curriculum is akin to the difference between a script of a play and each scene as conceived by the director.

The *enacted curriculum*, the interactions between teachers and students around the tasks of each lesson and accumulated lessons in a unit of instruction, then, is analogous to the performance of the play, complete with the idiosyncrasies and unpredictable elements of live performance. The enacted curriculum cannot be scripted because the enactment itself requires teachers to respond in the moment to the events in the lesson. That said, the enacted curriculum is influenced by the teacher intended curriculum, the instructional resources being employed, the students, a host of contextual factors, and the teacher's ongoing responses to these variables. The double arrow between the teacher intended and the enacted curriculum signals that the teacher intended curriculum can be dynamic; teachers are likely to make revisions in their plans as the curriculum is being enacted.

Student Learning

The variable often of most interest in studies of the curriculum enactment process is student learning—the residue (to use a term introduced by Hiebert et al., 1997) that remains with students as a result of participation in the enacted curriculum. We choose to define learning broadly to acknowledge the multiple ways that learning is conceptualized and to emphasize that the stuff of mathematics learning is greater than the content knowledge and skills typically assessed on tests. Knowledge, skills, and practices are critical parts of student learning noted in the framework. At the same time, we take learning to include the influences of instructional experiences on attitudes, interests, perceptions, and identities that have substantial consequences for students' future learning. These are all aspects of student outcomes that have been studied in relation to the enacted curriculum.

We see student learning as being primarily shaped by the enacted curriculum and the instructional materials. The relationship between student learning and the enacted curriculum is depicted as bidirectional because as students interact with the tasks, the materials, one another, and the teacher, in the classroom, they co-create the enacted curriculum.

Contextual and Influencing Factors

Drawing on the CSMC framework and a large body of existing research, we understand both the official curriculum and the operational curriculum to be influenced by a number of mediating factors. These factors may be social, political, structural, or cognitive and they may exercise their influence through formal and informal policy, collectively shared opinions or perspectives, institutional constraints or supports, and individual human capacity. We have selected the term factor, rather than "force" as used by CSMC, because we consider them integral to the system of curriculum design and implementation, rather than external and separate from it. Further, the way these factors exercise influence within the system varies and, in some cases, needs further exploration or elaboration. Thus, we conceptualize them as mediating variables and potential objects of study.

The model identifies a set of possible influencing factors according to the objects of influence, i.e., factors that influence official goals and curriculum, instructional materials, teacher intended curriculum, enacted curriculum, and student learning. The factors listed below are those most commonly cited in the research, but are not intended to be exhaustive. Further, their mode of influence can be explicit and direct, or complex and subtle. In many cases, influencing factors conflict with one another and their resulting impact on the curriculum is not straightforward. It is also important to note that, as the pathways in the model suggest, many key variables are expected to have a role in mediating other variables.

Some of the factors that may influence official goals and curriculum include: perceived and expressed needs of society; advancements in the fields of mathematics, learning, educational practice, assessment, and technology; policies, accepted assessment practices and constraints; values and beliefs about mathematics and the goals of education as held publicly and by individuals and groups yielding power.

- Factors that may influence instructional materials include: market forces; the views of professional societies, research on learning, official curricular goals and the factors that influence them; and developers' visions.

- Factors that may influence the teacher intended curriculum include: teacher knowledge, beliefs, and practices about mathematics, pedagogy, learning, and curriculum resources; access to resources and support; understanding of particular students' needs; and the local context.

- Factors that may influence the enacted curriculum include: teacher and student knowledge, beliefs, and practices; access to resources, such as instructional technologies; and contextual opportunities and constraints.

- Factors that may influence student learning include: students' prior knowledge, identity, attitudes, motivation, home support, peers, and comfort in the classroom and with the content.

Important Dimensions for consideration

Two issues emerged in our discussions that increase the complexity of the framework described above. One is time spans and the other is organizational levels. Both of these dimensions require the researcher to consider the way the variables in the framework are, in reality, multi-dimensional and would be best understood as nested or layered phenomena. The dimension of time span emerges when we consider the fact that curriculum can be examined by considering a number of different intervals of time including a single lesson, a unit, an entire year, or multiple years. Different variables in the curriculum framework might be easier to examine when different time spans are considered. In the description of the framework above, there are points at which the term "curriculum" refers to a span of an entire year of instruction and other points, when the discussion focuses on a single lesson. When examining the enacted curriculum, researchers must consider the role that focusing on different spans of time might play.

The dimension of organizational levels is more straightforward in its effect on the entire phenomenon under study, but still complicates the model. When we think about the enacted curriculum, and as our model suggests, it is assumed that it is being enacted at the classroom level by a single teacher in a single classroom. In school systems, though, teachers are nested in schools. Typically in the public school system, schools are nested in districts, which are nested in states. It is quite possible that many of the variables would look slightly different at various organizational levels. The designated curriculum, for example, is generally most pronounced and influential at the district level (for schools situated in districts). At the same time, it is likely that schools will add elements to the designated curriculum by indicating a particular text or resources that teachers are expected to use in their classroom instruction. Our discussion of enacted curriculum assumed that the individual teacher and classroom was the unit of analysis; still, it is possible to imagine an intended or enacted curriculum at the school level. A curriculum leader at an individual school might play a role in interpreting and translating the designated curriculum for the entire school, creating a school-level intended curriculum. An understanding of the multiple, possible organizational levels of curriculum enactment will allow researchers to examine subtle and nuanced elements of the implementation process as they occur in real, nested settings.

Pathways of Influence

The arrows in the diagram are intended to signify paths of likely influence, suggesting questions or hypotheses that could be the focus of research. Some of these paths have been empirically explored; others are speculative. It is also worth noting that these paths of influence represent points of connection across different levels of, and players in, the system. In some cases, they highlight places where a hand-off of sorts occurs, so it is at these points that interpretations and translations necessarily occur. These pathways, their strength, and their character are all potentially important objects of study to further our understanding of the enacted mathematics curriculum.

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