The Informed Educator Series

Ensuring What Is Tested Is Taught: Curriculum Coherence and Alignment

> "That standards and assessments must be properly aligned is neither new nor controversial. But the need for alignment has acquired new urgency with the escalating use of student assessment results to determine sanctions and rewards for schools, teachers, and students" (Ananda 2003, 1).

As educators work to address the challenge of having all students meet state standards, one element has been identified as key to successful improvement efforts: alignment of what is tested with what is taught. In addition to having commonsense appeal, most schools and districts also would say this has been a long-time part of their practice.

Recently-conducted research, however, has identified some important information concerning curriculum alignment. First, the alignment often is not as tight as many educators assumed it was. Second, focusing time and attention on increasing alignment and developing processes to ensure the intended is both taught and learned have been demonstrated to have a significant positive impact on student achievement. Finally, the staff work needed to develop this improved alignment has typically resulted in improved grade-to-grade and school-to-school communication and collaboration as an additional benefit.

This *Informed Educator* focuses on what research and best practice tell us about improving alignment between state assessments and district and school curricula. In addition, it discusses the other elements needed to ensure this curriculum is successfully taught.

What Is Curriculum Coherence and Alignment?

Many districts and schools have engaged in processes intended to align their curriculum with state-required assessments, but there is a broader concept—curriculum coherence—within which alignment fits in educationally effective schools. In Marzano's view, too often "the notion of a coherent implemented curriculum is simply accepted by most educators as a matter of faith" (2003, 23). Reality, however, may be different:

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> Recently, a district superintendent told me that for twenty years he had mistakenly assumed each of his schools was determining what would be taught to children at each grade level, but was shocked to find that assumption entirely false; he discovered that no principal in his district could tell him what minimal content each child in a grade was expected to learn (Hirsch 1996, 26-27).

Curriculum Coherence

Curriculum coherence is in place when "policies, strategies, and content across subject areas and grade levels are consistent and aligned, reflect standards, and result in students, teachers, and parents positively perceiving the rationale, scope, and sequence of educational experiences" (Liebling 1997, 16). In Beane's view:

> A "coherent" curriculum is one that holds together, that makes sense as a whole; and its parts, whatever they are, are unified and connected by that sense of the whole. The idea of coherence begins with a view of the curriculum as a broadly conceived concept—as *THE* curriculum—that is about "something." It is not simply a collection of disparate parts or pieces that accumulate in student experiences and on transcripts. A coherent curriculum has a sense of the forest as well as the trees, a sense of unity and connectedness, of relevance and pertinence. Parts or pieces are connected or integrated in ways that are visible and explicit. There is a sense of a larger, compelling purpose, and actions are tied to that purpose (1995, online).

King and Newmann define program coherence—along with teachers' knowledge, skills, and dispositions, and the existence of professional community—as a key element in school capacity. In their view, "a school's instructional capacity is enhanced when its programs for student and staff learning are coherent, focused on clear learning goals, and sustained over a period of time" (2000, 577).

Researchers from the Consortium on Chicago School Research have found support for this view of the importance of instructional coherence to student achievement. Rubric indicators of an instructionally coherent program (see figure 1) were developed and teachers surveyed to assess the degree to which each of 11 high-poverty elementary schools had instructionally coherent programs. From 1993-97, schools with coherent instruction had a 12 percent increase in scores on the Iowa Test of Basic Skills, while schools with no coherent

Figure 1. Rubric Indicators of an Instructionally Coherent Program

- Teachers within a grade purposely link their curriculum (including arts, health, library, computers, etc.) to stated learning goals.
- Teachers within a grade use common instructional strategies.
- Teachers within a grade use common assessments.
- Teachers coordinate curriculum and assessments to avoid repetition and to offer students new and more complex aspects of subject matter as they move from grade to grade.
- School-sponsored support programs, such as remedial instruction, assemblies, field trips, tutoring, and parent education, are linked to the curriculum, instruction, and assessments of the school program.
- Professional development for staff supports the implementation of common curriculum, instructional strategies, and assessments.
- Professional development programs are sustained over time.
- The school strategically accepts and refuses programs and initiatives in a manner supporting staff focus, program continuity, and ongoing improvement.
- School improvement planning and assessment directly address school progress in providing a common, coordinated, and sustained school program.
- Curriculum remains reasonably stable over time and thus provides teachers sustained opportunities to learn how to teach it well.
- Assessments remain reasonably stable over time so that teachers have sustained opportunities to prepare students well for them.
- Teaching assignments remain stable enough over time that teachers have sustained opportunities to learn how to teach a particular group of students.
- Key program leaders and positions remain stable over time so initiatives can be supported and developed (Newmann, Smith, Allensworth, and Bryk 2001, 20).

plan either showed no improvement or saw their scores drop (Newmann, Smith, Allensworth, and Bryk 2001).

These researchers suggest three major conditions are necessary for such coherence to prevail in a school:

- a common instructional framework that guides curriculum, teaching, assessment, and learning climate, combining specific expectations for student learning with specific strategies and materials to guide teaching assessment;
- staff working conditions supporting implementation of the framework; and
- the allocation of resources—materials, time, and staff assignments—to advance the school's common instructional framework and avoid scattered improvement efforts (2001, online).

Curriculum Alignment

"Simply stated, alignment means agreement," according to Ananda. "The underlying assumption is that a coherent message and system will positively influence what teachers teach and what students ultimately learn" (2003, 2).

Leibling reminds us that curriculum alignment is not a newly developed process. However, it is:

> . . . currently experiencing a resurgence in interest as a standards-based process to improve teaching and learning. Evidence of this interest can be found in a variety of current efforts across the country to redesign and realign the local written, taught, and tested curriculum in the light of state or national educational standards. Standards-based curriculum alignment lies at the heart of school reform because it implies that there has been a "meeting of the minds" regarding academic content standards, performance assessment, and a comprehensive curriculum that will enable students to achieve high levels of proficiency on assessments aligned with standards (1997, 3).

What Does the Research Say?

In addition to the commonsense notion that students will do better if they have been taught what is tested, Marzano (2003) provides support from research on school-level factors contributing to student achievement. His analysis of the research identifies a "guaranteed and viable curriculum" as ranking first among five elements. He also highlights the importance of opportunity to learn as integral to this. Specifically, for students to achieve standards, there must be a match between three types of curricula:

- the intended curriculum—content specified by the state, district, or school to be addressed in a particular course or at a particular grade level;
- the implemented curriculum—content actually delivered by the teacher; and
- the attained curriculum—content actually learned by students.

Research conducted over the past few years of schools and districts that have significantly—and often quickly—improved student scores on state-required assessments demonstrates the importance of alignment. In their summary of four studies focused on school districts that improved rapidly, Cawelti and Protheroe found the districts profiled:

> . . . reported a striking change in the attention paid to curriculum and instruction. Conversations about how to improve instruction—for an entire grade or for an individual student—were almost constant. Teachers, often supported by central-office staff,

> Educators involved in standards-based reform agree that for standards to have value and meaning, they must be tied to curriculum and instruction, professional development, and assessment…. The impact of setting standards in a specific district will depend, in part, on the district's purposes for setting standards. Will standards be used to guide instruction, or will they be measures of accountability with consequences for individual students, teachers, and schools? Balancing these purposes should be part of the standards-setting process (Educational Research Service 1998, 1-2).

> met to engage in planning for curriculum alignment, to develop pacing guides, and to talk about grade-to-grade articulation. In addition, many of the districts developed benchmark assessments that were used to identify problems with student mastery of content and skills at the school, classroom, and student level. The emphasis was on ensuring that problems were identified and addressed quickly…. [And] as districts recognized the need to better align the curriculum with state assessments, many of them provided time for teachers to collaborate on this project. Teachers reported that the discussions held as part of these efforts often resulted in a better understanding of grade-by-grade expectations for students—and the part they played in that. At the building level, many principals developed schedules that made it possible for teachers to collaborate routinely—talking about individual students who needed extra support, planning units, and discussing assessment results. This not only got necessary work completed, it also changed the culture of many of the schools and districts. Teachers felt as though they were being better supported in their work as professionals and were part of the larger picture of the district (2003, 62, 65).

A similar picture was found by researchers from the Consortium for Policy Research in Education in their study of 22 districts in five states. Among other key reform elements, researchers observed increased efforts to align curriculum and instruction were often a "patchwork of loose and tight central control . . . [that may vary] by subject matter" (Massell 2000, 5). Findings from similar studies follow. The consistency of the findings highlights the importance of district and school attention to curriculum alignment.

North Carolina Study

The Evaluation Section, Division of Accountability Services of the North Carolina Department of Public Instruction identified districts in which clusters of high-poverty/high-minority schools made "noticeable achievement gains" and in which there was a reduction in the Black-White achievement gap. Several practices were identified in these districts that were typically *not* in place in schools identified as low-performing and their districts. Among others, they included these efforts to increase alignment:

- focused and strategic planning directed toward the process of aligning teaching and learning and the elimination of fragmentation;
- an aligned and pervasive academic focus described as "district direction, with school and classroom implementation." Districts promoted alignment of written, tested, and taught curriculum by providing districtwide pacing guides, lessons that could be shared among teachers, and, sometimes, periodic diagnostic assessments; and
- coherent and consistent professional development aligned with the overall direction and initiatives in the school and district (Evaluation Section, Division of Accountability Services, North Carolina Department of Public Instruction 2000, 2-3).

Educational Research Service Study

In this study of six districts that experienced rapid improvements in student achievement, Cawelti and Protheroe repeatedly found the districts had embedded activities focused on curriculum alignment into their improvement efforts. Superintendent Terrill Donicht writes the following in a message to parents in the Twin Falls School District, Idaho:

> Our district has spent considerable time and effort developing a curriculum that identifies what we want students to know and be able to do in the core subjects.... Each curriculum specifies the content standards students must obtain in these areas at each grade level, based on content, reasoning and thinking, and lifelong learning. Teachers have developed and piloted district assessments based on these standards, in order to measure student learning…. As a final step, the curriculum is aligned with local summative tests and state assessments (in Cawelti and Protheroe 2001, 53).

In the Ysleta Independent School District in Texas, interviewed staff members were consistent in their estimation of the positive effects of alignment efforts on both teaching and learning. Training provided for staff included activities to help teachers understand what skills were to be taught, how to teach them, and how to continuously assess student progress and mastery. Today, schools continue to use state and local assessment data to focus on individual student and school performance and to make adjustments or provide support as needed.

Learning First Alliance Study

The districts studied by LFA made instruction the centerpiece of their improvement efforts. To support staff in their efforts to improve student achievement, districts put in place a systemwide approach to improving instruction. Togneri and Anderson expand on this:

> Before current reform efforts, the districts lacked a universal understanding of expected outcomes. Some schools had common texts, but no districts had systemwide curricula. Boards did not make instruction and achievement central to their work. Principals were more likely to focus on the operations of the school than on the activities in the classroom. Teachers alone determined their curriculum and instructional methods…. Without a common base on which to work, teachers and principals received fragmented guidance about instruction.
>
> Today, much has changed. In general, districts are engaged in building systems in which the parts coalesce to collectively support instruction. While the components are not yet fully implemented, districts are making progress (Togneri and Anderson 2003, 11).

Togneri and Anderson (2003) also identify components of improvement efforts relating to alignment activities. Specifically, the districts now have:

- systemwide curricula that connect to state standards, are coherent across grade levels, and provide teachers with clear expectations about what to teach;
- an accountability system with systemwide use of data to inform practice, hold schools accountable for results, and monitor progress toward attainment of curricular goals;
- an approach to professional development that includes a coherent and district-organized set of strategies to improve instruction and that is specifically developed to support attainment of curricular goals.

In the districts studied by the Alliance, it was considered important to teach to standards represented on state-required assessments. Intensive work was done on curriculum alignment, and teachers were expected to follow pacing schedules developed through central office-teacher or teacher-teacher collaboration. In some of the districts, interim assessments that paralleled the state assessments were developed for use in periodically checking student mastery of content.

Council of the Great City Schools Study

"Lack of instructional coherence" was identified as a problem in the districts studied by CGCS prior to changes made as a result of improvement efforts; specifically, the districts:

> . . . suffered from having different educational initiatives and curricula in individual schools. Likewise, the districts discovered a lack of alignment between instruction and the state standards. Each of the districts had recently experimented with site-based management, which had produced a variety of different educational strategies within each district. This often proved confusing to school-level staff and difficult for the district to support. Additionally, the professional development strategy was fragmented; professional development was not focused on a consistent educational strategy (either of instruction or curricula) and often consisted of one-shot workshops on a series of topics (Snipes, Doolittle, and Herlihy 2002, 3).

CGCS's researchers talked with people in each of the case-study districts about the strategies they felt had been most influential to district improvement efforts. They found the improving districts typically focused on student achievement and specific achievement goals, on a set schedule with defined consequences; aligned curricula with state standards; and helped translate these standards into instructional practice. The goal-setting process was considered an important exercise in consensus building, and the achievement goals—with timelines—were used as roadmaps for the reform efforts.

A key strategy was to adopt or develop districtwide curricula and instructional approaches rather than allow each school to devise its own strategies. This was meant to address the problems of curriculum misalignment and high rates of student mobility. A common core of instruction was

expected across each of the districts. The districts supported these districtwide instructional strategies at the central office through professional development and support for "faithful" implementation throughout the district, even in the face of some teacher resistance to "prescribed" strategies.

CGCS also studied comparison districts that had not been experiencing improvement in student achievement. Researchers found these districts were different in certain key ways that hampered their improvement efforts. For example, the improving districts were much more likely to:

- explicitly align district curriculum to state standards and assessments;
- adopt or develop a uniform curriculum or framework for instruction;
- develop clear grade-to-grade alignment in curriculum;
- push for faithful implementation of curriculum supported by the devlopment of pacing guides for teachers; and
- provide uniform professional development intended to support the curriculum (Snipes, Doolittle, and Herlihy 2002).

Critical Elements Needed to Increase Curriculum Coherence and Alignment

The research reported thus far makes clear that efforts to increase curriculum coherence and alignment must be intentional and well-organized to be effective. In all of the improving districts studied, the active role that the central office took was paramount to ensuring more happened than mere talk about alignment.

In addition, the efforts took substantial amounts of staff time. Both schools and districts often needed to organize themselves differently and shift resources to the efforts. Some key elements of the process included alignment of the curriculum with the assessments; the development of pacing guides and, often, unit and lesson plans for teachers; and monitoring to ensure what was planned was actually taught. Support for the process was provided through staff development and almost continual use of data.

Aligning the Curriculum

Leibling talks about the "how-to's" of curriculum alignment. Traditionally, districts have used one of two processes—backloading or frontloading—or a combination of these. Backloading:

> . . . involves the alignment of the written curriculum's learning goals with the tested curriculum's content…. Backloading typically begins with a review of assessment data for individual students or groups of students to determine those items that cause the greatest difficulty. Teachers then examine curriculum content to ascertain whether the test content topics with which students have so much difficulty might be related to the degree to which the curriculum sufficiently addresses that content. On the basis of this analysis, teachers may decide to revise instructional content with respect to such variables as time allotted, texts or materials used, or instructional approaches to improve the "match" between the test's content and the curriculum's content. Advocates of backloading assert that a careful match of curriculum content to gaps in student knowledge as defined by assessment data will result in teachers' gaining greater control over instruction and increased predictability regarding the success of the curriculum in preparing students for the assessment. This assumes, however, that the selected assessment reflects what all constituencies agree should be taught and tested (1997, 6).

In contrast to backloading, "frontloading involves the alignment of the tested curriculum's content with the written curriculum's learning goals" (Leibling 1997, 7). Typically, this occurs when districts, schools, or individual teachers develop assessments aligned with learning goals.

Many districts and schools are now using a combination of the two processes to ensure their students make progress toward standards. While they might first engage in an extensive backloading process, they might then develop assessments—or provide teachers with staff development to help them develop effective assessments—that are used to measure incremental progress toward standards.

Data from these assessments can then be used to identify students in need of additional instruction or

support or knowledge/skills that large numbers of students are not able to demonstrate even after instruction. Adjustments can then be made to instruction.

Leibling suggests attention should be given to activities at both the district and school levels (see figure 2), because:

> A district's coherent K-12 written curriculum is one that is externally congruent with state or national standards. In turn, instructional planning at the school level is internally congruent with the district's standards-based curriculum through mindful connections of standards, assessments, and curriculum (1997, 18).

The first phase of the process would focus on ensuring "content standards and benchmarks are adequately addressed in particular grades or courses" and "content redundancy is avoided" (1997, 25). In Liebling's view, the second phase of the process is critical because it is here that teachers, often in district- or schoolwide committees, work on unit mapping and lesson planning.

Teachers need to be at the center of this process, and schools and districts are finding the alignment process itself is a powerful staff development process. Consider this description by Squires of activities embedded in a thorough alignment effort. Teachers meet cooperatively in grade-level teams or across grade levels:

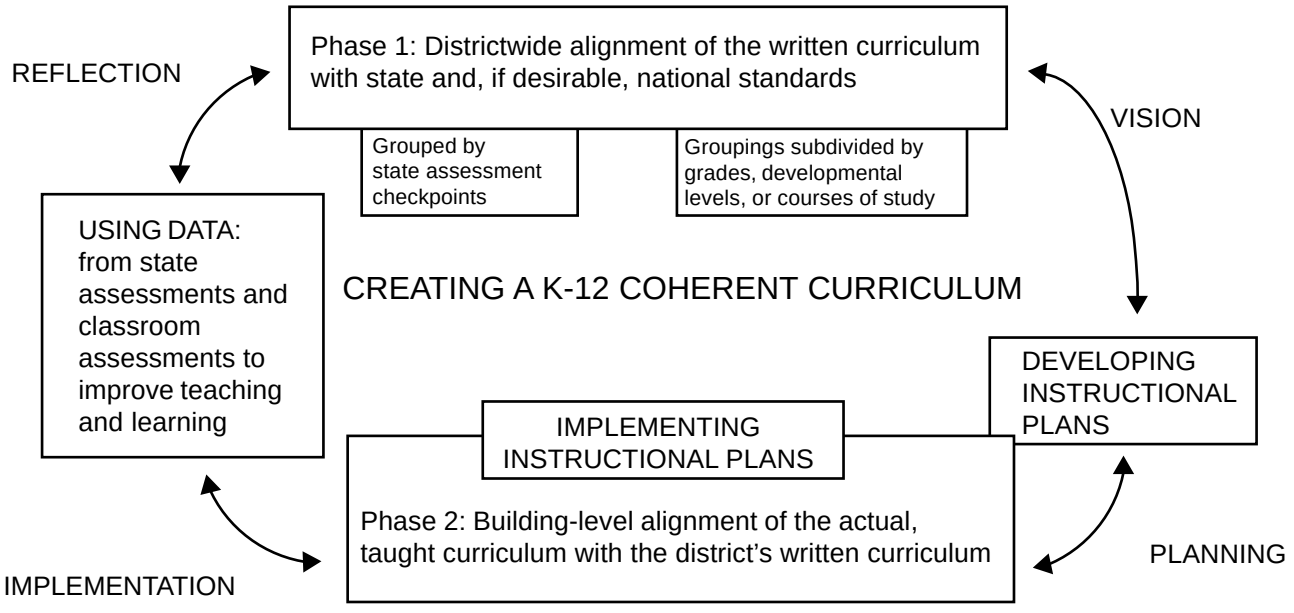
> . . . to arrive at consensus about what is most important to teach students.... [They] coordinate decisions between grade levels or courses so that the curriculum makes sense as a whole both vertically and horizontally [and] they use results of unit and standardized assessments to help the school refine and improve the curriculum (Squires 1998, 17).

Using Data to Ensure Learning

Research shows using data from assessments to gauge student achievement throughout the curriculum alignment process and beyond is essential. In the ERS study on high-performing school districts cited earlier, Cawelti and Protheroe found "the use of assessment data to improve and target instruction [as] a key element in the improvement process" (2001, 46).

The case-study districts in the Council for the Great City Schools study committed themselves to data-driven decision making and instruction, with

Figure 2. An Inquiry Strategy for Achieving Standards-Based Curriculum Alignment through Mindful Teaching



Source: Liebling 1997, 18.

data used to identify problems and gauge the impact of interventions. They gave early and ongoing assessment data to teachers and principals, then trained and supported them as the data were used to diagnose teacher and student weaknesses and make improvements. A specific application of data use was:

> . . . [a] push in the case study districts to identify students and teachers in need of help earlier in the school year. Teachers are often provided with scores from the previous year's classes, as well as the scores of their incoming students, to use in planning instruction. These data help identify specific content areas that teachers and students need assistance with. The case study districts produce reports that disaggregate data by school, teacher, and student. These reports are used to identify teachers in need of support and training. District staff and building leaders work to keep the focus on professional development, at least when a teacher in need of support is first identified, so there is not a sense that the data are being used punitively. Data disaggregated by race and socioeconomic status are also used to monitor the progress of specific subgroups of students who have not been well-served traditionally (Snipes, Doolittle, and Herlihy 2002, 55).

Although the rapidly improving districts profiled in the several studies mentioned earlier made significant use of data provided through state-level assessment systems, this was not the only data resource; for example:

> . . . some districts instituted interim and diagnostic testing mechanisms to monitor progress at different points in the year…. For all the study districts, however, formative assessment meant more than testing. Teachers and administrators increased their review of student work as a vehicle to assess student learning. Other data, such as principal observation feedback, retention statistics, and satisfaction surveys, increasingly guided decisions at the school and central office levels…. Our study revealed that these districts did not just talk about data; they used them to guide important decisions about teaching and learning, particularly at the central office and principal levels…. At the school level, the degree of data use varied, but there were promising examples in all districts. Principals and teachers analyzed data to monitor progress, to determine the effectiveness of their instructional approaches, and to figure out where to make adjustments. Teachers looked to data to determine specific learning patterns—for example, whether certain students exhibited difficulties in identifying words by sight, or whether they were still struggling with sounding words out (Togneri and Anderson 2003, 20).

The director of instruction in one highly effective district in which central-office staff members provide support for school-based use of data explains the process used:

> The first step is simply that we disaggregate the data…. We get the teacher rosters from the principals for the following school year and we prepare that data for each teacher during the summer and put it in a folder so they've got exactly which objectives were mastered and which objectives were not mastered by each student. So, the first day of school, teachers know exactly what their students know and don't know. In the past, as a teacher, I know it would take me at least six weeks to figure out where my kids were (Ragland, Asera, and Johnson 1999, 14).

Research also supports the need to assess student progress throughout the school year to help guide decisions about individual students and teachers, as well as about the curriculum. A report by the Evaluation Section of the North Carolina Department of Public Instruction talks about what was found in successful North Carolina schools:

> Frequent and diagnostic use of assessment data . . . is critical and is used to create a sense of urgency as well as to direct planning and instruction…. Discussions among teachers about what constitutes quality work are an important aspect of assessment that enhances instruction and consistency across classrooms (2000, 3).

A common pattern seen in improving districts is the development of benchmark tests that parallel the state-level assessments. "Schools are expected to use data from these assessments to gauge progress, refine plans and programs, and make mid-course corrections" (Ragland, Asera, and Johnson 1999, 15).

Finally, data from end-of-the-year assessments can be used to identify needed shifts in curriculum or areas in which teachers need professional development or resources such as lesson plans.

Ensuring the Intended Curriculum Is Taught

Even when well-developed plans for curriculum alignment and coherence are in place, teachers may slow down instruction, perhaps because of a perceived need on the part of the teacher for more review and repetition or to continue to teach "favorite" units no longer emphasized in the curricular plan. "Ensuring that teachers address the essential content is necessary to implement a guaranteed and viable curriculum…. [since it] is not uncommon for teachers to make idiosyncratic decisions regarding what to cover and what to leave out even within the context of highly structured curriculum" (Marzano 2003, 30).

Many schools and districts have found that engaging teachers in efforts to develop pacing guides provides a more concrete plan for what should be taught and when. The North Carolina Department of Public Instruction talks about this:

> In stock car racing, drivers count on the pace car to start the race, reorganize the pack after track mishaps and generally keep things moving forward. In the classroom, pacing guides serve the same function. Many North Carolina schools and school districts are focusing on pacing guides to help ensure that teachers and students thoroughly cover the most critical curriculum material and that they stay on track throughout the year. Spurred by higher-stakes accountability and by a strong desire to find ways to improve performance for all students, local school districts are pulling teachers in during the summer or at other times outside of school to develop these detailed guides. Good teachers have always used pacing guides of some type…. What is new is that school districts are now providing a way to bring together their best teachers to develop guides that directly support local and state goals…. [In many districts], guides or plans of this type are the basis for structuring class and for daily, weekly, monthly, and quarterly review of how instruction and learning are progressing. In some districts, it is built into school improvement plans (2000, online).

The Department also identifies what it believes are the essential components of effective pacing guides, including:

- major concepts to be covered in a discipline;

In Guilford County (N.C.), teachers, curriculum specialists and testing experts [worked] for about 18 months to develop what they are calling a prioritized curriculum, a local version of a pacing guide. Fifth-grade teacher Patsy Hill at Allen Jay Elementary in Guilford County calls the prioritized curriculum "the best thing" she has done in 33 years of teaching. "The curriculum is so jam-packed," Hill explained, "that it is hard, especially for new teachers, to go in and decide what is most important." Dr. Larry Allred, Guilford director of instructional achievement, said that they had examined school districts in the county with at least 90 percent of their students proficient. "Clearly, they had developed a curriculum that was clearly articulated and focused. The prioritized curriculum drives the focus for us."

To develop the guides, Guilford County looked at the Standard Course of Study in communication skills, mathematics, science, and social studies and at the end-of-grade tests to determine which areas were most heavily weighted on the tests. Then they organized the curriculum elements into three categories: essential, important, and less important or optional. Classroom assessments also were built in so that teachers could have additional tools to gauge student progress throughout the school year.

[As teachers used] the new prioritized curriculum, they have [provided] feedback to the district on how well the guides were working.

Hill said that the whole package (the prioritized curriculum and the sample activities) gives new teachers the benefit of the experiences of many teachers through the years. Even for more experienced teachers it is extremely useful, she said. "This makes the curriculum digestible for teachers."

Allred believes the product—the curriculum guide or pacing guide—is important, but so is the process used to produce it. "This process enables teachers to see how data can be used for instructional purposes. It adds a team dimension. For example, about 30 social studies teachers representing grades 1-12 worked together. For the first time, fourth-grade teachers, had to present to the eighth-grade teachers, and they both had to present to the 11th grade. And, we began to have a real strand of instruction as each level understood the others. I would love to see us do this every five years" (North Carolina Department of Public Instruction 2000, online).

- reasonable time spans/constraints in a given topic of study;
- resources needed (print, technological, human, media, etc.); and
- provision for individual differences (2002, online).

Staff Development

Research also stresses the importance of staff development that supports the intended curriculum as a key factor in curriculum alignment implementation and overall school improvement efforts. Snipes, Doolittle, and Herlihy note the districts they studied lacked certain coherent elements prior to the changes made for school improvement. More specifically:

> [T]he professional development strategy was fragmented; professional development was not focused on a consistent educational strategy (either of instruction or curricula) and often consisted of one-shot workshops on a series of topics (2002, 3).

Districts studied by the Learning First Alliance also adopted new approaches to professional development to support instructional improvement efforts characterized as "remarkable shifts" from previous practice:

> To varying degrees, all districts in the study moved beyond the traditional, one-time workshop approach to professional development and put in place coherent, district-organized strategies to improve instruction…. Today, the picture looks quite different. It includes deliberate strategies to use research-based principles of professional development, widespread use of data in decision making, and clear connections between district goals and school-level practices. This is in large part the result of coherent strategies that districts put in place to support and improve instruction (Togneri and Anderson 2003, 23).

The districts used research-based principles of professional development—for example, connecting development to district goals—to guide their work. They developed networks of instructional experts such as instructionally proficient principals and teacher leaders (e.g., content specialists, mentor teachers) to support teachers. They provided extensive support systems for new teachers. The districts were strategic in their allocation of financial resources. Finally, the "districts worked hard to ensure that funds were available for principal training, teacher leader training, and other priorities to build instruction" (Togneri and Anderson 2003, 27).

Benefits and Challenges of Curricular Coherence /Alignment

Schools and districts have found there are both benefits and challenges involved when they engage in efforts to increase curricular coherence and alignment.

Benefits

When teachers and administrators work together to coordinate decisions about curriculum within and between grade levels, a school's curriculum makes sense as a whole, both vertically and horizontally (Squires 1998). This means instruction builds on previously learned concepts as students progress through grade levels (vertical alignment) and that all students within a grade level are learning the same material over the course of the year (horizontal alignment). A well-aligned curriculum ensures students are taught the skills and standards tested on state assessment exams.

An elementary school principal points to current district efforts to have teachers and schools work together to more closely align the curriculum scope and sequence across the district as an important element in the improvement efforts. In her view, this will help students who move within the district to adjust to new surroundings more quickly (Cawelti and Protheroe 2001).

A teacher describes her participation in a grade-level alignment process: "I have learned the standards for my grade level. I have found the . . . process to be a real plus for planning and implementing the curriculum in my classroom" (Chrispeels 2002, 385). Another teacher remarks, "The work that my colleagues and I have done has really focused in on our curriculum and targeted the California standards. It has helped me reflect on my own teaching that I am continually trying to improve" (Chrispeels 2002, 385).

In Johnston's (n.d.) view, work on aligning the curriculum opens up the curriculum to internal review, stimulates dialogue across disciplines about how to approach standards in an interdisciplinary way, and promotes the sharing of effective instructional strategies.

Why does instructional coherence promote student achievement? Newmann, Smith, Allensworth, and Bryk (2001) provide an answer:

> Compared to disconnected short-term experiences, integrated experiences, sustained long enough for successful completion, provide greater clarity about what is required for mastery, and how prior knowledge can be applied to future questions. Students learning to read, for example, are more likely to gain basic skills, and the confidence to tackle more challenging tasks, in settings where all of their teachers assist their reading in a consistent manner (15).

Teachers who had recently participated in their school's instructional alignment process also highlight the following reasons for why curricular coherence and instructional alignment may lead to gains in student achievement:

- The entire staff becomes focused on the most important parts of the curriculum.
- Expected outcomes, teaching strategies, and assessments are better aligned.
- Curriculum mapping facilitates the identification of connections between subject areas.
- Teachers know what other teachers at their grade level and teachers at the grade levels above and below theirs are teaching, making it easier to cooperate with these teachers.
- There is greater consistency in the preparation of students for the next grade level (March and Peters 2002).

In contrast, schools lacking a coherent vision for instruction often suffer from "improvement strategies that bring attention to a school through numerous program and equipment purchases but fail to build its capacity to improve teaching and learning" (Newmann, Smith, Allensworth, and Bryk 2001).

Research points to this problem of too many unrelated, unsustained "improvement" programs—referring to it as the Christmas tree approach—and the detrimental effect such incoherent efforts can have on student learning (Newmann, Smith, Allensworth, and Bryk 2001). Students who pass through these unaligned and incoherent instructional programs may "experience delays, repetitions, and/or skips in core knowledge and skills in ways that seriously diminish their chances for success in school and, in particular, on the tests used to measure their knowledge and their progress" (Smith, Smith, and Bryk 1998, 29).

In addition, despite a principal's best intentions and teachers' best efforts, when too many programs are in operation, or several programs are being used to solve one problem, teachers may become overwhelmed, overworked, and frustrated, leading to a decrease in the effectiveness of all of the programs.

Gordon (2002) also notes that for instructional coherence to lead to school improvement "a school needs its teachers to be invested in making the strategy work" (online). The most successful schools use a mix of top-down and bottom-up strategies to ensure teachers have a stake in the work of the whole school and some decision-making role (Gordon 2002).

A Potential Problem

The move to more tightly align the curriculum with a state-mandated assessment represents a shift away from site-based decision making for many schools and districts.

Snipes, Doolittle, and Herlihy, researchers for the Council for the Great City Schools study, observed this tension in Houston:

> Despite an historic and publicly stated philosophical preference for decentralized decision-making, the leadership in Houston eventually came to believe that they could not effectively reform instruction without making curricular decisions at the central office.… [In addition,] Houston also embarked on a centralized effort to clarify learning objectives and instruction in math, writing, and science. Under the auspices of Project CLEAR (Clarifying Learning to Enhance Achievement Results), Houston worked to

> translate the Texas state standards and learning objectives into instructional practice…. [by providing] detailed information about each learning objective, prerequisite skills, how the concept connected across grades, and a variety of strategies for teaching each objective (2002, 50).

School staff or individual teachers within schools sometimes reported a feeling of less freedom of choice in regard to what and how content was taught. This was often balanced, however, by increased opportunities to work with other staff members and a sense of satisfaction when student scores on assessments improved.

Engaging in the Process

Superintendent Terrill Donicht described what typically happened in his district before alignment efforts began:

> For the first four or five years, we'd take a look at [ITBS results] and say: "We're not doing well. Let's do better. Let's work harder," but without any specific strategies in mind (Cawelti and Protheroe 2001, 46).

The district moved away from this approach by spending "countless" hours on developing a set of aligned curriculum standards and benchmarks at various grade levels.

This effort has provided opportunities for teachers to talk together across grade levels, with one kindergarten teacher remarking it had opened her eyes to what the children with whom she worked needed to know to be successful in subsequent grades. Donicht also discussed the importance of this alignment to Twin Falls' improvement efforts:

> The key to all this is identifying what it is you want kids to know. That's the hardest part. It's taken four or five years to decide—at every grade level—what we want taught. Now we're aligning the knowledge and skills we've identified with the state standards (Cawelti and Protheroe 2001, 52-53).

Johnston describes some critical, teacher-focused components of alignment activities that should be embedded in the process:

1. *Make time.* Use staff development time to conduct the alignment activity. Planning days scheduled before school in the fall and the first inservice days in October may prove to be enough time to get the job done.
2. *Keep it simple and focused.* Provide teachers with copies of the state standards for each subject and grade level in the school. For a follow-up activity, obtain sample items from the state mastery test. These can form the basis for aligning the curriculum with the state assessment as well.
3. *Make it realistic.* Assemble teams of teachers by subject area or grade level. Have each teacher bring to the workshop copies of the teacher's edition of the textbooks they use, unit plans, and supplementary instructional materials. Focus on the material they use most of the time, rather than abstract curriculum guides or plans.
4. *Raise awareness and keep it raised.* Give each teacher a set of highlighters in different colors. Ask them to page through their instructional materials, keeping the standards beside them, and to highlight the sections of the materials that coincide with the standards.
5. *Decide when, where, how much, and how often.* After linking content to standards, ask each group to review the standards and, for each one, determine at which grade level and in what unit the standard is introduced, emphasized, and assessed. This helps the team ensure all standards are taught and assessed at some point; it also identifies areas that are neglected or over-emphasized.
6. *Think interdisciplinary.* After this work has been done, seek help from other faculty. Department or grade-level chairs should review the content standards to identify ways their grade or department might support one another's instruction.
7. *Share ideas, tips, and practices.* Ask teachers at every team and faculty meeting to share a strategy or tip they found effective in teaching a specific standard or skill. Or, following a classroom observation, the principal might ask a teacher to do a "five-minute inservice" on an effective approach she or he is using in class.

Getting the Curriculum Aligned in Barbour County School District, West Virginia

During the 1997-98 school year, the Barbour County School District in West Virginia made a commitment to raise student achievement. After receiving the results of the SAT 9 administered in June 1997 and learning Barbour County Schools were among the lowest-achieving in the state, school officials knew they had to undertake school improvement efforts.

On the first day of the school year, all staff attended a meeting at which the results of the previous year's SAT 9 scores were presented, and a plan to raise student achievement was described. During the following months, staff development focused on the West Virginia IGOs and on curriculum alignment. The small central-office staff worked with principals and teachers to begin the process of curriculum alignment, something that had to be done both quickly and well if the efforts were to affect student performance on the test in April.

After schoolwide efforts were completed, teachers were required to develop—and discuss with principals—their long-range plans for what they would be teaching. These plans described in detail the skills and knowledge each teacher planned to cover on a weekly basis for the entire year. Principals reviewed lesson plans throughout the year to be sure the teaching schedule was on track, and that reading, language, and math remained the focus of instruction.

Another form of alignment, and one that focused very directly on problem areas, came through item analysis of SAT 9 results. Detailed printouts were provided, showing which students did or did not master specific concepts, including the subtests of reading, mathematics, and other subjects. Using this chart, a teacher would be able to review the individual performance of each of his/her students, concept by concept.

These data not only helped teachers see the specific areas of difficulty for each student, they also helped teachers and principals to pinpoint objectives needing to be covered more thoroughly or taught in a different way. Teachers could then be provided with support—staff development, assistance from a master teacher, etc.—on either content or instructional approaches to improve their teaching.

When asked what had made a difference in the district's efforts to improve, staff repeatedly provided two answers: curriculum alignment and focus. In their view, the curriculum alignment activities, including the information about student performance on the previous test, helped them identify what needed to be taught and when. They could then better focus on instruction (Cawelti and Protheroe 2001, 78).

8. *Don't forget the test.* A follow-up activity involves repeating a similar process with sample items from the state mastery test. Teachers are asked to review all the items and identify where in the curriculum the student would have learned the material needed to be successful on each item. This helps to identify gaps as well as places where one content area can be bolstered by teaching in another subject (Johnston n.d., online).

The process of aligning the curriculum to standards and assessments will be time-consuming and sometimes difficult. A challenge for some schools and districts arises when standards and assessments in their states are themselves poorly aligned; specifically, there may be:

> . . . deficiencies in standards such as a lack of clarity in particular standards or redundancy of content across different standards. Such deficiencies make it difficult to develop items that are sufficiently aligned. Similarly, it is often difficult to evaluate the match of ill-constructed assessment items to particular content standards (Ananda 2003, 7-8).

Covey states the process of curriculum alignment "must begin with the end in mind" (in Downey 2001, 19) and provides the following suggestions:

- Ensure "external assessment target objectives are embedded in the district's written content standards and student objectives." These standards and objectives should be written so that the assessed objectives are clearly located in the curriculum. Be sure there are different objectives for each grade level and subject area.

- "Have clear, precise, deeply aligned . . . curriculum objectives that include the content, context, cognitive level, and standard of performance." The district's curriculum objectives should be written with precision—clearly specifying the content to be learned, the context in which the learning must be demonstrated, the appropriate cognitive level to be mastered, and the degree of mastery required.
- "Provide a feasible number of objectives to be taught." Most curricula have too many objectives to be taught within the time available for a typical learner. Focus is particularly important for low-performing schools.
- "Create a learning sequence in advance of the objective being tested and place objectives in a teaching sequence. Objectives need to be placed in the curriculum sequence at least six months to a year before the student encounters the material" on a high-stakes test.
- "Align programs to the curriculum and ensure textbooks and instructional resources are aligned to the curriculum/assessments. All informal programs need to be investigated as to their alignment to the district curriculum objectives and modifications made to ensure high alignment."
- "Conduct staff development in curriculum and assessment use." Staff members "need to receive quality training on the basic alignment concepts, use of the aligned curriculum scope and sequence, and selection of activities from resources for alignment to the curriculum." In addition, staff members need adequate training on how to use the district assessments to influence what and how they teach and to whom (2001, 19).

In Conclusion

Gordon, in discussing Chicago school reform efforts, describes the activities researchers have observed in rapidly improving Chicago schools as "moving instruction to center stage" (2002, 5). Sam Williams, a principal in a Texas district, has seen this happen in his district and has experienced the positive impact of district and school efforts to increase coherence and alignment:

> No matter what you do [in school improvement efforts] . . . you can't afford to have a fragmented plan. The children need consistency and we need to have a plan that keeps staff joined at the hip in terms of what children are taught (in Cawelti and Protheroe 2001, 28).

A coherent curriculum "provides a way for schools to define, align, and assess a curriculum to generate improved student results while maintaining a balance that everyone understands, accepts, and uses for continual improvement" (Squires 1998, 24). Curriculum alignment helps teachers make decisions about what is important to teach children.

Liebling stresses the importance of educating staff about more than the "how-to's" of curriculum alignment since:

> . . . the success of standards-based curriculum alignment may well rest with the intent of each

The following list of questions, developed by the Council of Chief State School Officers, may help educators gauge the degree to which curriculum and instruction are aligned in their school or district.

- Are specific curriculum frameworks or other supporting documents available with examples of how standards can be applied to instructional practice?
- Do these tools suggest modifications for instructing diverse learners?
- Has your school (or district) established (or have access to) resource banks of materials and instructional tools?
- Does the school have well-articulated standards for curriculum and instructional materials that are aligned with student content and performance standards?
- Does the district provide sufficient guidance about curriculum and instructional materials to local schools and their staff?
- Is an effective process in place to monitor, evaluate, and review efforts to improve curriculum and instructional capacity (excerpted from Council of Chief State School Officers 2002, 21)?

> teacher to embrace not only the "how-to" of alignment, but the "why-to" as well. Merely going through the motions of linking standards, assessments, and instruction or the piecemeal matching of state standards to existing curriculum units is unlikely to result in the changes in teaching and learning that systemic reform seeks. Even carefully crafted standards-based units might not have their desired impact if they are the work of one teacher in a sea of others who remain uncommitted to the standards vision of an instructionally coherent curriculum (1997, 16).

Schools and districts across the country are struggling with ways to significantly improve student achievement as measured by state-required assessments. Taking a multifacted approach to "moving instruction to center stage" is a necessary first step, and it is clear that efforts to make the curriculum more coherent—and to ensure what is tested is first taught—must be part of these efforts.

References

Ananda, Sri. (2003). Rethinking issues of alignment under No Child Left Behind *(Knowledge Brief)*. San Francisco: WestEd.

Beane, J.A. (1995). Introduction: What is a coherent curriculum? In J.A. Beane (Ed.), *Toward a coherent curriculum.* Alexandria, VA: Association for Supervision and Curriculum Development. Retrieved from http://www.ascd.org/readingroom/books/beane95book.html

Cawelti, G., & Protheroe, N. (2001). *High student achievement: How six school districts changed into high-performance systems*. Arlington, VA: Educational Research Service.

Cawelti, G., & Protheroe, N. (2003). *Supporting school improvement: Lessons from districts successfully meeting the challenge*. Arlington, VA: Educational Research Service.

Chrispeels, J.H. (2002). The California Center for Effective Schools. The Oxnard school district partnership. *Phi Delta Kappan* (January 2002), 382-387.

Council of Chief State School Officers. (2002). *Expecting success: Self-assessment and resource guide for improving service delivery*. Washington, DC: Author.

Downey, C. (2001). District leaders: Step up to the plate. *Leadership* (September/October 2001), 18-20.

Educational Research Service. (1998). Using content and performance standards at the local school district level (*ERS Informed Educator*). Arlington, VA: Author.

Evaluation Section, Division of Accountability Services, North Carolina Department of Public Instruction. (2000). *Improving student performance: The role of district-level staff*. Retrieved from http://www.nc.publicschools.org/Accountability/evaluation/esalbriefs/vol2n4-role.pdf.

Gordon, D.T. (2002). Moving instruction to center stage. *Harvard Education Letter* (September/October 2002). Retrieved from http://www.edletter.org/current/index.shtml

Hirsch, E.D., Jr. (1996). *The schools we need and why we don't have them*. New York: Doubleday.

Johnston, H. (n.d.). A simple curriculum alignment activity for high school faculties. *The Principal's Partnership*. Retrieved from http://www.principalspartnership.com/curricalignment.html

King, M.B., & Newmann, F.M. (2000). Will teacher learning advance school goals? *Phi Delta Kappan* (April 2000), 576-580.

Liebling, C.R. (1997). *Achieving standards-based curriculum alignment through mindful teaching*. Arlington, VA: The New York Technical Assistance Center and The George Washington University Region III Comprehensive Center.

March, J.K., & Peters, K.H. (2002). Curriculum development and instructional design in the effective schools process. *Phi Delta Kappan* (January 2002), 379-381.

Marzano, R.J. (2003). *What works in schools: Translating research into action*. Alexandria, VA: Association for Supervision and Curriculum Development.

Massell, D. (2000.) The district role in building capacity: Four strategies (*CPRE Policy Briefs*). Philadelphia: Consortium for Policy Research in Education.

Newmann, F.M., Smith, B., Allensworth, E., & Bryk, A.S. (2001). *School instructional program coherence: Benefits and challenges*. Chicago: Consortium on Chicago School Research. Retrieved from http://www.consortium-chicago.org/pdfs/p0d02.pdf

North Carolina Department of Public Instruction. (2000). Local curriculum guides set the pace for classrooms. *Just for Teachers* (Spring 2000). Retrieved from http://www.dpi.state.nc.us/egroup_archive/teachers_archive/jftspr00.html

Ragland, M.A., Asera, R., & Johnson Jr., J.F. (1999). *Urgency, responsibility, efficacy: Preliminary findings of a study of high-performing Texas school districts*. University of Texas at Austin: The Charles A. Dana Center.

Smith, J.B., Smith, A., & Bryk, A.S. (1998). *Setting the pace: Opportunities to learn in Chicago's elementary schools*. Chicago: Consortium on Chicago School Research.

Snipes, J., Doolittle, F., & Herlihy, C. (2002). *Foundations for success: Case studies of how urban school systems improve student achievement—An abstract*. Washington, DC: Council of the Great City Schools.

Squires, D.A. (1998). Toward a balanced curriculum: Aligning standards, curriculum, and assessments. *ERS Spectrum* (Summer 1998), 17-24.

Togneri, W., & Anderson, S.E. (2003, March). *Beyond islands of excellence: What districts can do to improve instruction and achievement in all schools—a leadership brief*. Washington, DC: Learning First Alliance. Retrieved from http://www.edpolicy.org/research/documents/biefullreport.pdf

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