

<b>Title:</b>	New York Formative Assessment Project: From Research to Practice
<b>Created by:</b>	New York Comprehensive Center

**Audience:** Teachers, instructional coaches, principals, district leaders, **state education employees, professional development providers**, local/state board members; **higher education faculty; and comprehensive centers staff.**

**Description:** This document was created by New York Comprehensive Center for internal review within the New York State Education Department (NYSED). In May 2009 the New York Board of Regents established new policies that enhance NYSED's focus on the *instructional core*. This document was written to clarify ways in which the New York Formative Assessment Project aligns with the department's strategic focus on the instructional core. It outlines the research base underlying formative assessment practice, highlights various strategies for state-level support of formative assessment, and describes how formative assessment supports state education priorities. This document summarizes knowledge that had been reviewed by the NYSED Formative Assessment Workgroup and introduces data from the Year 2 project evaluation showing preliminary results from the New York Formative Assessment Project in Syracuse NY.

**How it was used:** This document was shared with NYSED leadership. It supported internal discussions about possible scaling up of formative assessment practices in New York State. In particular, as New York was in process of refining their state system of support to low performing schools and districts, this document provided timely information about how to employ formative assessment as a core strategy to support schools and districts in New York State. In particular this document clarified how innovative formative assessment practices align to new state education strategic priorities.

**Key Lessons:** While material in this document was well-known by some, providing updated information revived dialogue about next steps in the New York Formative Assessment Project and contributed to deeper understanding of project outcomes.



# **New York Formative Assessment Project: From Research to Practice**

Prepared for the  
New York State Education Department  
by the New York Comprehensive Center

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In May 2009, the New York Board of Regents articulated the following goal for the State's education system: "A New York in which all people are prepared for citizenship, work and continued learning throughout their lives. The Regents foresee a New York in which gaps in achievement have closed, and the overall level of knowledge and skill among the people matches or exceeds the best in the world. They want dramatically improved results for all students – from elementary and secondary school to post-secondary education and beyond – with clear, measurable outcomes such as increased graduation rates from both high school and post-secondary institutions."

At the same meeting the Board of Regents made the policy decisions: 1) Build the capacity of school districts to improve their own schools rather than to work directly at the school level; 2) adopt a theory of action that focuses on the instructional core; and 3) build an integrated system of support with defined roles for NYSED, BOCES, school districts, and other partners. "In its simplest terms, the instructional core is composed of the teacher and the student in the presence of content" (City, Elmore, Fiarman, & Tietel, 2009, p. 22). Therefore, this policy decision communicates a focus on teacher quality, student needs and supports, and instructional content that is guided by high-quality standards and an aligned curriculum.

In support of these three Regents policy decisions, for the past two years, the New York Comprehensive Center (NYCC) has collaborated with the NYSED, the Assessment and Accountability Content Center (AACC), and the Syracuse City School District (SCSD) to implement formative assessment practices in mathematics classrooms in grades 4 and 5 in ten Syracuse elementary schools. On May 8, 2009, SCSD and the Conference of Big 5 School Districts held a meeting where everyone shared what they had learned over this two-year project period. Syracuse teachers, coaches, principals, and district staff highlighted numerous successes from this project, including more efficiency in classroom teaching, greater student engagement in mathematics, and improved student achievement.

Representing the AACC, Dr. Margaret Heritage, a national researcher and professor of education at UCLA, informed the participants that SCSD's formative assessment project is at the forefront of district-wide formative assessment implementation in the country. Dr. Heritage has worked with many countries, states and districts to support the effective implementation of formative assessment. The academic and education policy communities recognize her as a leading expert on formative assessment research and practices in the nation. Dr. Heritage went on to characterize the Syracuse Instructional Resource Teachers, the math coaches who participated in the project, as

"...by far the most expert practitioners of formative assessment I have met in all the states and districts I have worked with. I don't know of any district in this country that has such skilled professionals who are so knowledgeable about the research on formative assessment and who are able to bridge research and practice in the classroom."

She also urged the NYSED to capitalize on the success of this collaboration and provide the leadership for widespread implementation of formative assessment as a research-based strategy to enhance teaching, learning, and student achievement throughout New York State.

Overall, this paper delineates the implementation of formative assessment as a potential significant component of a New York statewide system of support that focuses on improving the instructional core. Specifically, this paper:

- I. defines formative assessment;
- II. summarizes the research base supporting formative assessment as a practice to improve teaching and learning;
- III. summarizes investments in formative assessment other states have made;
- IV. summarizes work already accomplished in New York; and
- V. explains how formative assessment aligns with existing SED priorities.

## **I. Definition of Formative Assessment**

Of the different assessments educators use, formative assessment is perhaps the most commonly misunderstood. Many conceive formative assessment to be periodic tests, sometimes given as occasionally as twice a year, sometimes given as regularly as once a week. However, the formative assessment that research supports as having the power to dramatically improve student learning is not about another test—no matter how regular—but rather a shift in classroom teaching and student learning. It is a research-based instructional process teachers use to increase student performance.

In 2006, the Council of Chief State School Officers (CCSSO) created the Formative Assessment Study Team (FAST). Its initial assignment was to examine the research to clarify the meaning of formative assessment and to determine how it could best be used by the nation’s educators. The team came up with the following definition:

Formative assessment is a process used by teachers and students during instruction that provides feedback to adjust ongoing teaching and learning to improve students’ achievement of intended instructional outcomes. (CCSSO, 2008a.)

In other words, formative assessment is a process embedded in instruction to redirect teaching and learning in ways that help students master learning goals. The primary purpose of formative assessment, as conceived in this definition, is to provide a steady-stream of evidence that teachers and students use to inform instruction and learning during the teaching and learning process. Formative assessment involves collecting evidence during the course of instruction about how student learning is progressing so that adjustments can be made to close the gap between students’ current understanding and the desired goals.

One key feature of this definition is its requirement that formative assessment be regarded as a *process* rather than a particular kind of assessment. In other words, there is no such thing as “a formative test.” Instead, there are a number of formative assessment strategies that can be

implemented during classroom instruction. These range from ensuring students know and share the goals for each lesson's intended learning; to informal observations and conversations; to planned, instructionally embedded techniques designed to elicit evidence of student learning to inform and adjust instruction; to student self-assessment; to strategies that promote the participation of every student in the classroom. These actions are ongoing and dynamic, taking different forms day-by-day within each classroom, but always adhering to common principles. For a model that summarizes the process see Appendix 2. For references to examples that illustrate these practices in action first see CCSSO, (2008b), then see Bailey & Heritage (2008); Brookhart (2007); Brookhart, Moss, & Long (2008); Heritage (in press).

The CCSSO definition and details of formative assessment summarized above represent the definition employed by the math coaches in Syracuse who worked closely with NYCC. This understanding aligns with other published definitions by leading assessment experts (see Appendix 3).

## **II. Research Demonstrating Formative Assessment to Be a Highly Effective Practice**

There is a compelling body of research showing that classroom formative assessment practices, as defined in this paper, lead to substantial gains in student achievement. This research spans many disciplines, including cognition, behavioral sciences, mastery learning, pedagogy, feedback, and applied measurement. Researchers found that providing teachers the support to implement classroom formative assessment practices rapidly closed achievement gaps, with students learning in six months what would have taken a year in other classrooms. They registered these gains by externally mandated standardized tests, not just school and classroom specific tests. Moreover, they have found that formative assessment benefits span students from kindergarten to post-secondary and across content areas (Wiliam, Lee, Harrison, & Black, 2004).

Research also indicates that formative assessment creates value beyond improved student academic achievement. Black, Harrison, Lee, and Wiliam reported in 2004 that formative assessment can promote significant gains in student motivation and self-efficacy (predictors of high school graduation) as well as teacher self-efficacy, satisfaction, and professional competence. A 2005 study of formative assessment in seven countries by the Organisation for Economic Co-operation and Development (OECD) revealed that "Teachers using formative assessment have changed the culture of their classrooms, putting the emphasis on helping students feel safe to take risks and make mistakes and to develop self-confidence in the classroom (p. 2)." Finally, Wiliam (2007) reasoned that formative assessment is more cost-effective than other school improvement initiatives, 20 to 30 times more-cost effective, for example, than reducing class size (See Appendix 1).

In summary, it should be noted that the National Research Council's three-year study on the science and design of education assessment recommends that policy and practice should heighten attention to formative assessment: "The balance of mandates and resources should be shifted from an emphasis on external forms of assessment to an increased emphasis on classroom formative assessment designed to assist learning." (Pellegrino et al., 2001, p.14)

### III. Formative Assessment Investments in Other States

With the documented record of formative assessment improving teacher practices, student performance, and closing performance gaps, many states have initiated statewide support for formative assessment. In order to promote and support the use of formative assessment in their districts and schools, several states have provided guidance, incentives, tools, and leadership to enable teachers to implement formative assessment practices. Here are examples:

- **Pennsylvania** has endorsed the CCSSO definition of formative assessment, sponsored a statewide conference on formative assessment for schools, districts, and intermediate education service units (BOCES equivalents), and given ongoing training to intermediate units. Pennsylvania is also developing voluntary core curricula across grades and content areas that include ready-made model units and lessons. Guidance on appropriate formative assessment practice is embedded into the model units and lessons.
- **Iowa** spent SY 2007-08 building capacity around formative assessment among its state education department personnel from across all departments. In SY 2008-09 its state education department worked with the AACC and its comprehensive center to build capacity at the regional level, investing in extensive professional development of its Area Education Agencies. Similar to Pennsylvania, Iowa has also begun developing voluntary core curricula with embedded guidance on formative assessment practices.
- **Vermont** has used a professional development program to train a statewide network of regional support providers in the state's vision of formative assessment. Once again, the theory of action is that they will, in turn, support districts in scaling up formative assessment practices.
- **North Carolina** is developing online formative assessment professional development for districts and schools statewide. This will include support for developing professional learning communities, a key component of the state's theory of action for formative assessment scale-up.
- **Montana** has just embarked on state sponsorship of formative assessment. This year it has piloted online professional development for 50 teachers. Next year, Montana will evaluate, refine, and scale up formative assessment for all teachers in the state.
- **Arkansas** has embedded formative assessment within the state's comprehensive approach to data use. Regional support providers have been trained and will support the initiative through guidance from Margaret Heritage.

From these examples, three themes emerge. First, states have established common definitions of formative assessment, ensuring it is understood as an instructional process, not a type of test. Second, states have actively championed a shared vision of formative assessment across the state. Third, states have folded formative assessment into existing policies and initiatives, strengthening professional development at all levels of the system. In summary, states are committing to the support of formative assessment as an effective strategy for improving teaching and learning in classrooms. It warrants pointing out that through the Comprehensive Center network, representatives from many of the states noted above have expressed interest in learning more about the work that has been done in Syracuse.

#### **IV. Pilot Implementation of Formative Assessment in New York and SED Support to Date**

In the winter of 2006 four organizations, the NYSED, the NYCC, the AACC, and the Syracuse City School District began the New York Formative Assessment Project to support the implementation of formative assessment in mathematics. This project was seen as the first step in the potential establishment of a statewide formative assessment program that could be adopted by other districts throughout New York State to achieve progress toward the Regents' goals of improving student performance and closing the achievement gap.

A key feature of the New York Formative Assessment Project was the support from a national student assessment expert assigned to the project from the Assessment and Accountability Content Center (Margaret Heritage). In addition, Syracuse was provided ongoing onsite technical assistance by a team of school improvement and mathematics experts from the New York Comprehensive Center.

Over a two-year period, the four organizations collaborated to implement formative assessment practices in ten Syracuse City School District elementary schools. The partnership focused on two primary objectives. First, the collaborating organizations worked with the Syracuse leadership team to create a district framework for assessment and data use. Second, we focused on building the capacity of school leaders and mathematics coaches to implement the framework at the school and classroom levels.

During the two years of the Project's initial district implementation, the external technical assistance providers worked with Syracuse district leaders, building principals and mathematics coaches to implement the framework. Four primary approaches were used to build district capacity to implement classroom formative assessment practices:

1. District leaders reviewed formative assessment research to establish a common definition of formative assessment and a shared understanding of the value of formative assessment.
2. Mathematics coaches were taught to apply a common set of data-use protocols to help administrators and teachers to analyze annual state assessment and district interim assessment data.
3. Mathematics coaches participated in a turn-key training model in which they learned about formative assessment research and practice. Coaches used this information to develop and implement a range of strategies to build the capacity of teacher teams to implement classroom formative assessment practices in mathematics.
4. Building principals and school leadership teams convened throughout the project to generate a shared understanding of formative assessment. Furthermore, they developed capacity to support formative assessment in their buildings in the context of their existing school improvement plans.

During the two year implementation, mathematics coaches worked with teachers to implement five "attributes" of formative assessment as outlined in the CCSSO definition. While Syracuse is in the early stages of implementation, changes in teacher practice have been observed in each of the five aspects of formative assessment practice. The table below outlines teacher changes in practice aligned with each of the five attributes.

**Table 1: Examples of changes in classroom formative assessment practices**

<i>CCSSO “Attributes of Formative Assessment”</i>	<i>Description of formative assessment attributes</i>	<i>Examples of observed/reported changes in classroom practices in Syracuse formative assessment schools</i>
<b>Learning Progressions</b>	Teachers improve their understanding of how concepts and skills build in a domain. Teachers explore the various paths students may take as they learn new concepts or skills.	<ul style="list-style-type: none"> <li>• Teachers and coaches review state learning standards to develop learning progressions for elementary mathematics classrooms.</li> <li>• Teachers and coaches analyze mathematical units to enhance the rigor of student learning tasks.</li> <li>• Teachers use information from learning progressions to refine and clarify student learning goals.</li> </ul>
<b>Learning Goals and Criteria for Success</b>	Teachers identify and communicate instructional goals for students.	<ul style="list-style-type: none"> <li>• Teachers design quality learning tasks aligned to learning goals.</li> <li>• Teachers use learning goals to design classroom formative assessment tasks that will elicit evidence of student learning.</li> <li>• Students are aware of and take individual responsibility for their daily learning goals.</li> </ul>
<b>Descriptive Feedback</b>	Students are provided with ongoing evidence-based feedback that is linked to the intended instructional outcomes and criteria for success.	<ul style="list-style-type: none"> <li>• Teachers apply in-the-moment evidence of student learning to redirect teaching and learning activities during instruction.</li> <li>• Teachers apply day-by-day evidence of student learning to form fluid student groupings to differentiate learning tasks.</li> <li>• Teachers establish classroom routines where students and teachers regularly discuss feedback on learning goals.</li> </ul>
<b>Self- and Peer-Assessment</b>	Teachers provide structure and support so students learn to be reflective of their own work and that of their peers.	<ul style="list-style-type: none"> <li>• Teachers develop and use self-assessment rubrics to help focus peer dialogue on learning goals.</li> <li>• Teachers implement daily routines (ex: red/green lights, white boards) so that students who are unsure of their next steps get immediate feedback.</li> <li>• Students develop strategies to monitor individual progress toward meeting their learning goals.</li> </ul>
<b>Collaboration</b>	The classroom and school culture supports teachers and students as partners in learning.	<ul style="list-style-type: none"> <li>• Teachers and coaches collaborate to review samples of student work, analyze data on student learning, review instructional activities and refine learning goals.</li> <li>• Teachers and coaches are observed and provided peer feedback during mathematics lessons.</li> </ul>

The direct support of SCSD by the NYCC and AACC on this project ended in June 2009. However, the district remains committed to expanding the use of classroom formative assessment practices to all SCSD schools within three years. SCSD mathematics coaches will support district-wide implementation by offering a range of in-district formative assessment training options, including delivery of professional development workshops, classroom coaching, facilitation of teacher team meetings and teacher/administrator support for data analysis.

A number of readily transferable tools and resources were created through this pilot. These tools are available for public dissemination. Examples include:

- data use protocols;
- the Formative Assessment Lesson Planning Tool;
- a formative assessment observation template;
- classroom coaching guidelines; and
- examples of formative assessment professional development activities for math coaches, teachers, principals and district administrators.

## **V. Alignment of Formative Assessment to Current NYSED Initiatives**

The NYSED has been a partner throughout the project. Beginning with the opportunity to partner with the NYCC and the AACC, NYSED has built the capacity of its internal staff in formative assessment practices. Since the first planning meeting of this project in March 2007, NYSED has had an internal working group that has met regularly to discuss formative assessment, keep abreast of the work done onsite in Syracuse, and plan for both internal capacity building and dissemination to external groups. This cross-departmental work group includes representatives from the offices of Curriculum and Instruction, School Improvement, Professional Development and Vocational Education Services for Individuals with Disabilities (VESID). They have helped share information about formative assessment in a variety of ways, including organizing training for nearly 100 NYSED staff members over the two years of the project. In addition, the NYSED Formative Assessment work group has engaged with the NYCC to share information about formative assessment and receive feedback from key external partners such as the Staff and Curriculum Development Network (SCDN), District Superintendents and the Conference of Big Five School Districts. The formative assessment work group is poised to move this project forward once senior leaders determine an appropriate approach for this work.

The NYCC's work in Syracuse with NYSED, and its investigations of practice in other countries and states reveals that formative assessment requires an inter-disciplinary and cross-departmental approach at both the policy and practice levels. Users of formative assessment benefit from increased knowledge of a wide range of topics, including assessment literacy, data use, application of content standards, student intervention practices, and the relationship between formative assessment and school improvement planning. Through the work of classroom formative assessment, gains in one area influence gains in other areas. For example, Syracuse coaches learned to differentiate between classroom formative assessment and interim assessments. Formative assessment thus became a vehicle for more effective data use practices at the district level and in this way furthered other district initiatives focused on the use of data to

guide quality instruction. NYCC, AACC, and SCSD agree that formative assessment policy needs to address both assessment literacy and teaching quality.

The New York Formative Assessment Project in Syracuse highlights the need to engage an interdisciplinary planning team to attend to the wide range of issues that will likely be raised through formative assessment implementation. Just as Syracuse engaged leaders from multiple disciplines and departments to plan district implementation, so too has NYSED, a practice that should continue to engage a broad, cross-departmental group to move this work forward. To date, representatives from numerous departments and work teams have participated in formative assessment training, including representatives from Assessment, RtI, Math Resource Center, Institutes of Higher Education, School Improvement, State Systems of Support, State Curriculum Developers Network, and BOCES District Superintendents. Because of the unique nature of formative assessment, NYSED would be well-served to have representation from across departments and initiatives if it is to integrate formative assessment as a key element of its statewide system of support.

## **VI. Potential Role of Formative Assessment in the New York Statewide System of Support**

NYSED is currently redesigning the New York statewide system of support. The NYCC has already delivered a comprehensive set of recommendations on the elements of that system. The following specifically relate to the potential of formative assessment.

1. Focus on improving the instructional core.
2. Base all actions on findings from scientifically based research and rigorous evidence of best practice.
3. Align the state's role to drive increases in district capacity to support schools and learning.
4. Continue to significantly enhance the preconditions for success, including a P-16 data system, standards, and assessments.
5. Ensure that the systems provide value to all districts and schools, including a strategy to prevent schools from falling into improvement status, and a set of general supports
6. Provide a more targeted and sustained set of supports to underperforming districts and schools.
7. Refine the role of the state and its agents to deliver a set of high-quality supports – both general and targeted.
8. Leverage and align all the major resources in support of the system's overall purpose.
9. Create the opportunities and structures for professional learning that actors across the system will need in order to slowly yet dramatically improve the instructional core.

The New York Board of Regents' subsequent decision to focus on improvement of the instructional core (i.e., the *interaction* between student, teacher, and content) as a strategy for district and school improvement requires increased attention to instructional approaches to district and school improvement rather than to structural ones. This in turn implies a series of layered supports designed to improve the instructional core in schools. By layered we mean that efforts to improve the instructional core and learning in the classroom will in turn require

supports at the school and then district levels. These, in turn, will require supports from NYSED and regional organizations such as the BOCES.

The state has limited financial resources.<sup>1</sup> In addition, learning and high-quality implementation of new instructional strategies demands time and energy. Consequently an effective improvement strategy will require a single-minded concentration on a limited set of investments within an integrated system of support. These should be those that are most likely to provide the largest gains in learning for the state's students, and those that provide particular support for students who are most at risk of failure.

There are strong arguments for promoting formative assessment within the statewide system of support as a classroom strategy for transforming the instructional core. The formative assessment process provides teachers with regular information about the learning needs and achievement of his or her students. Through the formative assessment process, the teacher in turn trains and involves the student in self-assessment, and enlists that student in a collaborative approach to learning with his or her teacher and peers. The essential shift in student orientation is a necessary part of the learning process that is often ignored in the push to improve academic outcomes as measured by state assessments.

Formative assessment also prompts teachers to address content. One Syracuse teacher, for example, confided that before applying formative assessment practices she thought her content knowledge to teach double-digit division was adequate. She had always been comfortable just using the standard algorithm. When she applied formative assessment practices she saw that, in fact, not all students were mastering the relevant standards. Wanting to provide the feedback to students and adjust teaching and learning strategies that would reach students who didn't learn the concept the first time, she realized her content knowledge wasn't up to the task. She pursued support to expand her content knowledge of multi-digit division. Overall, the more teachers in Syracuse became immersed in formative assessment, the further it pushed their learning of both content and pedagogy. In summary, formative assessment addresses and pushes change in all elements of the instructional core.

There are a number of other reasons for including formative assessment as a core strategy within the statewide system of support. Black and Wiliam (1998) find that formative assessment:

- is a strategy that is effective with many different student populations (In Syracuse, for example, teachers have found it effective with ESL and special education students);
- is applicable across all subject areas;
- is applicable across all grade levels, from pre-school level to higher education; and
- raises achievement for all students, but most dramatically for lower performing students

Syracuse funded teacher professional development in formative assessment through their Math Science Partnership (MSP) grant. This three-year grant is funded through the NY Office Curriculum and Instruction. Grant funding paid for substitute time and teacher stipends for professional development. Fourth and fifth grade teachers in the pilot implementation schools

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<sup>1</sup> Appendix 1 provides information of the costs of implementing formative assessment versus two other common improvement strategies.

received over 60 hours of professional development per year to learn mathematics content and implement formative assessment. Full-year substitutes were allocated to work in each of the 10 pilot sites, providing time for onsite math coaches to work directly with classroom teachers each month to define learning goals, review formative assessment approaches for upcoming lessons, analyze student work, etc. The state-level funding that supported this work was critical to support effective implementation to the pilot schools.

As with any significant and large-scale change in practice, formative assessment would require a significant commitment by New York. It would require a coherent vision of what the formative assessment process comprises, and how implementation responsibilities would distribute across NYSED, BOCES, districts, schools, and other service providers. It would require strong support for the teaching profession and ongoing, embedded professional development built around that value.

Syracuse funded teacher professional development in formative assessment through their Math Science Partnership (MSP) grant. This 3-year grant is funded through the NYSED Office Curriculum and Instruction. Grant funding paid for substitute time and teacher stipends for professional development. Fourth and fifth grade teachers in the pilot implementation schools received over 60 hours of professional development per year to learn both mathematics content and formative assessment implementation. Full-year substitutes were allocated to work in each of the 10 pilot sites, providing time for onsite math coaches to work directly with classroom teachers each month to define learning goals, review formative assessment approaches for upcoming lessons, analyze student work, etc. The state-level funding that supported this work was critical to support effective implementation to the pilot schools.

This support would begin with revision of pre-service education and teacher induction to which the Regents have already recently committed. In addition, to attain depth and sustainability, ongoing, job-embedded coaching support would continue for two to five years. Coaches must not only possess expert content knowledge of formative assessment, but also coaching process skills, including elements of cognitive coaching. Mobilizing a statewide network of coaches with these capabilities is a critical role NYSED can play. Finally, relevant NYSED staff will need a deep knowledge of formative assessment and the research base that undergirds the process.

The role of learning communities deserves emphasis. Research and our experience reveal that to move formative assessment from conceptual knowledge to classroom enacted practices, schools, districts, and regions must apply increasingly collaborative processes where members analyze and refine instructional practices (City, Elmore, Fiarman, & Tietel, 2009; Fullan, Hill, & Crévola, 2006). Dylan Wiliam (2007) argues that such learning communities are the only way teachers can truly learn to implement formative assessment practices.

Finally, formative assessment would also align with two other Board of Regents goals. It would become a significant element in the revision of pre-service education and teacher induction, to which the Regents have already recently committed. It would also fit within, and could become integral to, New York's initiative to strengthen the way educators and policy-makers use data of all types to improve student learning.

## **VII. Possible Entry Points for Statewide Implementation of Formative Assessment**

During the past two years, the NYSED Formative Assessment work group has met regularly to discuss the Syracuse Formative Assessment Project and how to apply what has been learned from this project to statewide policy and practice. During this time this work group raised the following as specific entry points that would provide strong leverage to support teacher use of formative assessment practices in New York State.

- 1) Establish a formal cross-office work group to promote a common definition and streamlined approaches to formative assessment within NYSED.
- 2) Include formative assessment as a strategy for low performing schools and districts, as part of the overall State Systems of Support strategy.
- 3) Provide training through the State Systems of Support networks to ensure there is a consistent definition of formative assessment in the field.
- 4) Establish statewide support for content area coaches to develop common language and skills to implement building-based professional development and teacher support for formative assessment implementation, .
- 5) Develop an approach to statewide leadership development on formative assessment through use of existing leadership networks and organizations.
- 6) Establish course redesign for teacher preparation programs to build instructors content knowledge and opportunities for new teachers to learn formative assessment practices during their pre-service training.
- 7) Integrate formative assessment principles into the development of content standards and assessment tools to ensure that teachers are better able to understand the progression of skills and content across the grade spans.
- 8) Organize and coordinate funding streams to schools and districts to integrate formative assessment work into current funding sources.

This is not an exhaustive list of potential strategies to implement formative assessment practices in New York State. Rather, this list was developed as a possible integrated set of strategies that fit within the existing context of NYSED's work, and build from the New York Formative Assessment Project.

In sum, formative assessment has the potential to play a significant role in the transition to a comprehensive system of state support that focuses on the instructional core. We advocate that the system should work to improve the performance of all districts and schools, but provide the most direct and intensive support to districts and schools with the greatest needs.

## Appendix 1: Dylan Wiliam’s Cost-benefit Analysis of Formative Assessment<sup>2</sup>

“The term ‘formative assessment’ has been with us for forty years (see Wiliam, 2007, for an extended account of the origins of the term), but of course the underlying idea—that we should use evidence of learning to adjust instruction—has been around for thousands. Reviews of research in this area by Natriello (1987) and Crooks (1988) were updated by Black and Wiliam (1998) who concluded that regular use of classroom formative assessment would raise student achievement by 0.4 to 0.7 standard deviations—enough to raise the United States to the top five in the international rankings. Subsequent longer-term implementation studies (i.e., at least one year in duration) with tests that are less sensitive to instruction than those typically used in research studies, have found smaller effect sizes—typically around 0.3 standard deviations (Wiliam, Lee, Harrison & Black, 2004), but even these are large effects. To see how large, it is useful to compare the effects of teachers’ use of formative assessment with other kinds of educational interventions.

Intervention	Extra months of learning/year	Cost/classroom/year
Class-size reduction by 30% (e.g., from 30 to 20)	3	\$30k
Increase teacher content knowledge from weak to strong (2 standard deviations)	1.5	?
Formative assessment	6 to 9	\$3k

*Table 1: cost-effect comparisons for three educational interventions*

Table 1 shows the effect in the number of additional months’ progress per year, of three different educational interventions and the cost per classroom per year. The estimate of the effects of class size are based on the data generated by Jepsen and Rivkin (2002) noted above, and the estimate for teacher content knowledge is derived from Hill, Rowan and Ball (2005). Also discussed above (there is a question mark in the third column here because no-one has figured out how to raise teachers’ pedagogical content knowledge by this much). The estimate for formative assessment is derived from Wiliam et al. (2004), and other small-scale studies. The data in table 1 suggest that investing in teacher professional development is 20 to 30 times more cost-effective than class-size reduction, at least beyond the second grade.”

<sup>2</sup> An excerpt from the article, *Content then process: teacher learning communities in the service of formative assessment*. The article is from a pre-published draft since published in *Ahead of the curve: the power of assessment to transform teaching and learning*, edited by D. B. Reeves. Bloomington, IN: Solution Tree (2007).



### **Appendix 3: Published definitions of formative assessment by leading assessment experts**

#### **Linda Allal and Lucie Mottier Lopez**

“Formative assessment takes place day by day, and allows the teacher and the student to adapt their respective actions to the teaching/learning situation in question” (Allal and Lopez, 2005, p. 244).

#### **Margaret Heritage**

“Formative assessment is a process that takes place continuously during the course of teaching and learning to provide teachers and students with feedback to close the gap between current learning and desired goals” (Heritage, in press).

#### **Jim Popham**

“Formative assessment is a planned process in which assessment-elicited evidence of students’ status is used by teachers to adjust their ongoing instructional procedures or by students to adjust their current learning tactics” (Popham, 2008, p. 6).

#### **Lorrie Shepard**

“Formative assessment is defined as assessment carried out during the instructional process for the purpose of improving teaching and learning” (Shepard et al., 2005, p. 275).

#### **Dylan Wiliam and Marnie Thompson**

“Students and teachers using evidence of learning to adapt teaching and learning to meet immediate learning needs minute-to-minute and day-by-day” (Thompson & Wiliam, 2007, as cited in Wiliam, 2007, p. 191).

## Works Cited

- Allal, L. L., & Lopez, M. (2005). Formative assessment of learning: A review of publications in French. *In Formative Assessment: Improving Learning in Secondary Classrooms* (pp. 242-264). Paris: OECD Publishing.
- Bailey, A. L., & Heritage, M. (2008). *Formative assessment for literacy, grades K-6: Building reading and academic language skills across the curriculum*. Thousand Oaks, CA: Corwin Press Inc.
- Black, P. & William, D. (1998) Assessment and classroom learning. *Assessment in Education*, 5(1) 7-74.
- Black, P., Harrison, C., Lee, C., Marshall, B., & William, D. (2003). *Assessment for learning: Putting it into practice*. New York: Open University Press.
- Brookhart, S. (2007, December). Feedback that fits. *Educational Leadership*, 65(4) 54-59.
- Brookhart, S., Moss, C., & Long, B. (2008, November). Formative assessment that empowers. *Educational Leadership*, 66(3) 52-57.
- City, E., Elmore, R., Fiarman, S., & Tietel, L. (2009). *Instructional rounds in education: A network approach to improving teaching and learning*. Cambridge, MA: Harvard Education Press.
- Council of Chief State School Officers. (2008a). *Attributes of effective formative assessment*. Washington, DC: Author. Retrieved from <http://www.ccsso.org/publications/details.cfm?PublicationID=362>
- Council of Chief State School Officers. (2008b). *Formative assessment: Examples of practice*. Washington, DC: Author.
- Fullan, M., Hill, P., & Crévola, C. (2006). *Breakthrough*, Thousand Oaks, CA; Corwin Press Inc.
- Heritage, M. (in press). *Formative assessment: A process for improved student learning*. Thousands Oaks, CA: Corwin Press Inc.
- OECD (2005), *Formative Assessment: Improving Learning in Secondary Classrooms*, Paris, France: Author.
- Pellegrino, J. W., Chudowsky, N., & Glaser, R. (Eds.). (2001). *Knowing what students know: The science and design of educational assessment*. Washington, DC: National Academy Press.

Popham, W. J. (2008). *Transformative Assessment*. Alexandria VA: Association for Supervision and Curriculum Development.

Shepard, L. A., Hammerness, K., Darling-Hammond, L., Rust, F., Snowden, J. B., Gordon, E. (2005). Assessment. In L. Darling-Hammond, & J. Bransford (Eds.), *Preparing teachers for a changing world: What teachers should learn and be able to do* (pp. 275-326). Indianapolis, IN: Jossey-Bass.

William, D. (2007) "Content Then Process: Teacher Learning Communities in the Service of Formative Assessment" in Reeves, D. ed., *Ahead of the curve. The power of assessment to transform teaching and learning*. Bloomington, Indiana: Solution Tree.

William, D., Lee, C., Harrison, C., & Black, P. (2004). Teachers developing assessment for learning: Impact on student achievement. *Assessment in Education: Principles, Policy & Practice*, 11(1), 49-65.