



A descriptive analysis of state-supported formative assessment initiatives in New York and Vermont





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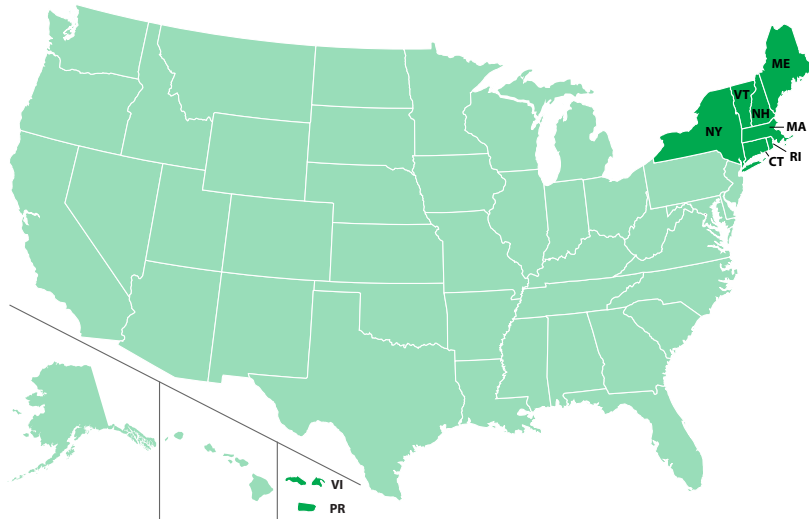
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A descriptive analysis of state-supported formative assessment initiatives in New York and Vermont

This study examines two state-supported formative assessment initiatives that promote a consensus definition of formative assessment endorsed by the Council of Chief State School Officers. It describes the primary components of the two initiatives and the strategies that state, district, and school leaders report using to support implementation of each initiative.

Education policymakers and practitioners are increasingly interested in formative assessment, in part reflecting widespread reports in the education press about formative assessment's potential for enhancing student learning. As schools and districts work to improve student learning outcomes, demand has grown for more information on state and local efforts to promote formative assessment and on the strategies that support its implementation.

A wide range of tools and practices are labeled “formative assessment,” and the broad use of this term has created uncertainty about just what it entails. To resolve some of this confusion, a national group of researchers, convened by the Council of Chief State School Officers (CCSSO), arrived at a consensus definition of formative assessment as “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” (McManus 2008, p. 3). To provide insights into how this consensus definition of formative assessment has been put into practice, this study examines two state-supported initiatives (in New York and Vermont) intended to promote the CCSSO's definition of formative assessment.

Two research questions guided this study:

- In Northeast and Islands Region states where state education agencies are supporting formative assessment initiatives, what are the primary components of each initiative?
- What strategies do state, district, and school leaders report using to support implementation of formative assessment initiatives?

This study relies on publicly available information and interviews to answer these questions. The publicly available information used includes websites and online documents such as official statements from state education agencies describing each initiative, progress reports on initiative implementation, interim or summary studies on each initiative, and documents from initiative leaders and their partners. This information was complemented

with semistructured interviews conducted with two state, two district, and two school leaders knowledgeable about each initiative.

The New York State Formative Assessment Technical Assistance Study was a pilot project in a large urban district that began in spring 2007 and ended in summer 2010. The Vermont Formative Assessment Project, launched in 2006/07, is an ongoing initiative that started with 9 schools the first year and expanded to 55 schools by 2008.

The study describes eight primary components for each initiative:

- *Goals.* Both initiatives aimed to improve student achievement through teacher use of formative assessment practices. Both initiatives also aimed to install, sustain, and spread formative assessment practices beyond pilot sites. Other implementation goals differed between the two initiatives.
- *Origins.* The two initiatives had different origins. The New York initiative emerged from a single district's request to the state education agency for support in developing capacity to train teachers in formative assessment. The Vermont initiative emerged from the state education agency's desire to help schools throughout the state adopt formative assessment.
- *Leaders and roles.* In New York, a single pilot district served as the primary leader of the initiative, while the state education agency supported the initiative financially and brought external technical assistance to the district. In Vermont, the state education agency led the initiative, drawing on an external vendor for training during the first year and on published training materials in subsequent years.
- *Use of external partners.* Both initiatives relied on external partners for support, but roles and costs differed. In New York, external technical assistance providers helped develop the initiative and provided support for the full three years of the initiative. In Vermont, an external vendor provided direct support only during the first year. The state built its capacity to sustain and expand the initiative in subsequent years without ongoing support from the external vendor.
- *Targeted participants.* The New York initiative focused on building the capacity of grade 4 and 5 teachers in formative assessment for math instruction during the first year, and participation was expanded to teachers in other grades in subsequent years. The Vermont initiative did not have a specific grade or content area focus.
- *Funding.* The New York initiative was funded through a three-year federal Mathematics and Science Partnership grant administered through the state. When the grant ended, so did the initiative. The Vermont initiative was funded by a variety of federal funds during its first year and by school and district funds in subsequent years.
- *Professional development.* Both initiatives provided initial and ongoing professional development to teachers in formative assessment. Training came from different sources, and each initiative provided

different levels of ongoing training and support to teacher leaders, principals, district officials, and state leaders.

- *Formal evaluation.* Both initiatives were formally evaluated. New York's evaluation efforts involved both quantitative and qualitative research methods, while Vermont's involved only qualitative methods. Early evaluation results suggested that both initiatives were successful in helping teachers gain a better understanding of formative assessment and incorporate formative assessment strategies in their regular classroom instruction. In Vermont, these findings encouraged state education agency leaders to continue the initiative and strategize scaling efforts.

State, district, and school leaders who were interviewed described a variety of strategies for achieving three implementation goals: getting teachers to adopt and integrate formative assessment practices into regular instruction, supporting and sustaining teacher use of formative assessment, and spreading or scaling use of formative assessment beyond pilot populations. Through analysis of the interview data, the study team identified nine sets of strategies that were present in both initiatives:

- Providing training by well known experts and credible evidence of the benefits of formative assessment.

- Creating a safe environment for teachers to try out new practices.
- Aligning initiative reforms with existing contexts and concurrent training efforts.
- Collaborating early with local leaders.
- Employing both voluntary and mandatory participation approaches.
- Providing ongoing training and support for teachers and others at different levels of the system.
- Establishing accountability and monitoring methods for sustaining initiative implementation.
- Building independent state and district capacity to sustain and spread teacher training.
- Harnessing enthusiasm at every level of the system to sustain and spread formative assessment.

This study details two state-supported initiatives that have worked to promote a consensus definition of formative assessment. Findings from this study offer exploratory ideas for future research and practice.

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This study examines two state-supported formative assessment initiatives that promote a consensus definition of formative assessment endorsed by the Council of Chief State School Officers. It describes the primary components of the two initiatives and the strategies that state, district, and school leaders report using to support implementation of each initiative.

WHY THIS STUDY?

Interest in formative assessment has been growing among education policymakers and practitioners as evidenced by frequent reports in the education press on formative assessment's potential for improving student learning (Chappuis and Chappuis 2007/2008; Tanney et al. n.d.). Since passage of the No Child Left Behind Act of 2001, the federal government has required states to design and administer accountability systems that set annual targets for student performance on large-scale assessments that schools and districts are expected to reach. As educators work to help schools and districts improve student learning outcomes, interest in learning about strategies such as formative assessment has increased.

Yet it is not always clear what education vendors and practitioners mean when they talk about formative assessment. The term is used to identify a wide range of tools and practices (Chappuis 2005; McMillan 2007; Tanney et al. n.d.). Convened by the Council of Chief State School Officers (CCSSO) to clarify the term, a group of national education leaders and researchers reached a consensus definition of formative assessment as “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” (McManus 2008, p. 3; see box 1).

Importance to the region

In line with heightened interest nationwide, the Governing Board of the Regional Educational Laboratory (REL) Northeast and Islands requested information on formative assessment initiatives within the region. A state education leader from Rhode Island also expressed an interest in initiatives receiving state support, asking for information on how state education agencies have built their capacity to support initiatives such as formative assessment that involve classroom-level activities. State education agencies have traditionally monitored and enforced

BOX 1

Abbreviations and definitions

Accountability and Assessment Comprehensive Center (AACC). A federally funded center that implements and evaluates assessment and accountability systems for states and districts working to meet the target of proficiency for all students under the No Child Left Behind Act of 2001. AACC was an external partner for the New York initiative. (www.aacompcenter.org/cs/aacc/print/htdocs/aacc/about.htm)

Educational services agencies. Partnerships of school districts, unions, institutions of higher education, and service providers in Vermont established to offer professional development to meet the regional needs of Vermont educators. (<http://education.vermont.gov/new/html/prodev/resources.html>)

Educational Testing Service (ETS). A nonprofit organization that creates education assessments, conducts education research, and develops services and products on a range of issues in elementary, secondary, and postsecondary education. Its Keeping Learning on Track interactive professional development program is used in the Vermont initiative. (www.ets.org/about/who)

Formative assessment. As defined by a national group of education leaders and researchers and endorsed by the Council of Chief State School Officers: “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” (McManus 2008, p. 3). Formative assessment differs from other types of assessment in three key ways: it is an ongoing process rather than a singular event (McManus 2008), it requires active and frequent interaction between teachers and students (Black et al. 2004, p. 47), and it is used to adapt instruction to student needs (Black and Wiliam 1998a).

Keeping Learning on Track (KLT). An interactive professional development program and training curriculum, developed by ETS and used in the Vermont formative assessment initiative, trains teachers in formative assessment through school-embedded teacher learning communities. (www.ets.org/Media/Campaign/12652/about.html)

Mathematics and Science Partnerships. A program run by the U.S. Department of Education that seeks to increase the academic achievement of students in math and science by

increasing the content knowledge and teaching skills of classroom teachers through formula-funded grants to states.

New York Comprehensive Center (NYCC). One of sixteen comprehensive centers funded by the U.S. Department of Education to develop the capacity of state education agencies to work with districts and schools to improve student achievement. (www.nycomprehensivecenter.org/about/)

No Child Left Behind (NCLB) Act of 2001. An act of the U.S. Congress that aims to improve the academic achievement of all students through increased state and local accountability, parental choice, local control and flexibility, and an emphasis on doing what works based on scientific research. The NCLB Act applies to all schools and districts that receive Title I funds.

Teacher learning community (TLC). Professional learning communities used under the Vermont formative assessment initiative. Groups of teachers meet monthly to learn and improve the skills needed to implement formative assessment in their classrooms. Each community is led by a trained TLC leader/facilitator. (http://education.vermont.gov/new/html/pgm_assessment.html)

federal and state education laws, but they have not commonly been staffed to provide direct services and supports to schools and teachers (Lusi 1997; Sunderman and Orfield 2006). To shed light on these topics, this study examines two state education agency initiatives within the region that promote practices that conform with the CCSSO’s consensus definition of formative assessment.

Study questions

This study considers the following two research questions:

- In Northeast and Islands Region states where state education agencies are supporting formative assessment initiatives, what are the primary components of each initiative?

- What strategies do state, district, and school leaders report using to support implementation of formative assessment initiatives?

Formative assessment initiatives were defined as formal, organized programs that promote teaching and learning practices consistent with the CCSSO's definition. The primary components of formative assessment initiatives (inputs and resources that constitute the basic features of an initiative; Weiss 1998) selected for examination include the goals, origins, leaders and roles, use of external partners, targeted participants, funding, professional development, and formal evaluation. For implementation the study focused on strategies that state, district, and school leaders reported using to promote the adoption, sustainability, and spread of each formative assessment initiative.

The study focused on two formative assessment initiatives in New York and Vermont that fit the study's selection criteria:

- Each was identified by the state as a project or coordinated effort to build capacity in formative assessment within the state.
- Each has promoted a set of practices consistent with the definition of formative assessment endorsed by the CCSSO.
- Each has been supported by the state education agency.
- Each is unique to the state and has not been part of a larger national initiative.
- Each has been implemented in at least one district within the state for at least one year.

Study methods are summarized in box 2 and detailed in appendix A. The teacher practices promoted by each initiative are in appendix B, and the primary components of each initiative are listed in appendix C. To provide context for the study and illustrate efforts to resolve some of the ambiguity concerning the concept of formative assessment,

appendix D briefly overviews the literature on formative assessment and student learning, difficulties in promoting its use among teachers, and strategies to promote sustained and widespread use.

FINDINGS

This study describes the primary components of two initiatives that have received state support to promote formative assessment practices—the New York State Formative Assessment Technical Assistance Study (NY-FATA) and the Vermont Formative Assessment Project (VT-FAP). It also reports how a small sample of state, district, and school leaders describe their efforts to promote three implementation goals shared by both initiatives: adoption, sustainability, and spread. Nine sets of implementation strategies were identified from the analysis of interview data. Interviewees suggested that all of these overarching strategies (and most substrategies) were employed in an effort to achieve at least two of the three implementation goals.

In Northeast and Islands Region states where state education agencies are supporting formative assessment initiatives, what are the primary components of each initiative?

Both NY-FATA and VT-FAP have been state education agency-sponsored initiatives intended to build local capacity in formative assessment practices that are consistent with the CCSSO definition and meet the other study eligibility criteria (see appendix A). The following components were examined for each initiative:

- *Goals.* Purposes of the initiative, including program goals and implementation goals (see box 3).

This study describes the primary components of two initiatives that have received state support to promote formative assessment practices—the New York State Formative Assessment Technical Assistance Study and the Vermont Formative Assessment Project

BOX 2

Summary of study methods and limitations

Study sample, data sources, and analysis. The study team collected state-level data and data from one district and one participating school in each state. The districts and schools were nominated by the state education agency or other initiative leaders for displaying a strong capacity to work with the state to achieve initiative goals or for implementing the initiative most fully. Data were collected from publicly available information (including documents received from initiative leaders and their partners) and interviews. Publicly available information included websites and documents available online, such as official state education agency statements describing each initiative; progress reports; and interim or summary studies on each initiative. Interviews were semistructured and conducted with two state, two district, and two school leaders for each initiative (see appendix E for the interview protocols).

Data matrices were used to guide, organize, and analyze the data from public sources. Interviews were digitally recorded, transcribed, and electronically coded using the qualitative data analysis software package ATLAS.ti (appendix F lists the interview data codes). Questions on missing, unclear, or contradictory data were sent to interviewees for clarification. Patterns in initiative components and implementation strategies were identified through iterative discussions among study team members and verification of interview transcripts and public document data.

The study team complied with Institutional Review Board policy and guidelines to ensure that interview subjects were informed of their rights as study participants. The study team also worked to ensure that the information interviewees provided was kept secure and confidential during data collection, analysis, and report drafting.

A full discussion of the study's methodology is in appendix A.

Study limitations. This study is limited by the small number of respondents interviewed and by the collection of data from only one district and school participating in each initiative. Recommended by initiative leaders as sites that had displayed a strong capacity to work with the state or where the initiative had been implemented most fully, the district and school selected for examination in each state are unlikely to represent typical participating sites. The knowledge and opinions of the two state leaders who were interviewed might not represent the knowledge or perspectives of all state education agency staff involved with each initiative, and the information and opinions shared by the two district and school leaders interviewed in each state might not represent those of other initiative leaders and participants. This study presents the perspectives of interviewees on initiative implementation strategies as an exploratory step for further research. It does not provide evidence of the effectiveness of either of these initiatives or of their impact on school, teacher, or student outcomes.

- *Origins.* Description of how the initiative started.
- *Leaders and roles.* In-state public education agencies that led or supported the initiative and their roles.
- *Use of external partners.* Roles of external partners that contributed to the initiative.
- *Targeted participants.* Types of schools, grade levels, and teacher content areas targeted for inclusion in the initiative.
- *Funding.* State-administered federal grants and local resources supporting the initiative.
- *Professional development.* Types of teacher professional development and training for school, district, and state leaders that were offered to support initiative implementation.
- *Formal evaluations.* Data collected and reports generated to assess initiative progress and outcomes.

The following sections describe each initiative by component (appendix C details each component).

BOX 3

Program and implementation goals

Some researchers distinguish between activities related to program intervention and program implementation. Fixsen et al. (2005, pp. 5–6) define intervention activities as “treatment or prevention efforts at the consumer level” and implementation activities as “efforts to incorporate a program or practice at the community, agency, or practitioner levels.” They suggest that implementation activities may unfold in a common set of stages, including program adoption, initial implementation, full operation, innovation, and sustainability. Activities related to scaling up or spreading programs may follow this last stage. This study uses the following definitions:

Program goals (such as higher student achievement) are related to the possible outcomes of program intervention activities, which involve interactions between students and teachers (such as interactions that occur in formative assessment).

Implementation goals (such as teacher adoption, sustained use, or spread of formative assessment practices) are related to the possible outcomes of program implementation activities, which involve interactions among teachers, teacher communities, teacher coaches, school principals, district administrators, state education agency officials, and external partners to further program goals.

New York Formative Assessment Technical Assistance Study. NY-FATA was a three-year pilot project in a large urban district that began in spring 2007 and ended in summer 2010. It was sponsored by the New York State Education Department.

Goals. The NY-FATA initiative had a mix of program and implementation goals. Program goals included higher student achievement through teacher use of formative assessment practices. Implementation goals included higher quality math instruction through strong professional development in math content, pedagogy, and formative assessment. District and state education

leaders hoped to build district capacity to spread formative assessment across the pilot district. They also hoped to promote a greater understanding of formative assessment among state education officials in different departments to increase support for formative assessment throughout the state.

Origins. Education leaders from a large urban school district were interested in strengthening teachers’ math instructional skills. Because outside experts had advised the district to improve student progress monitoring, education leaders were also interested in building teacher capacity to conduct fine-grained, day-to-day monitoring of student learning needs and to adjust instruction to address those needs. State education agency officials offered support by providing access to two federal education technical assistance centers with expertise in formative assessment. State education leaders were interested in supporting the district’s efforts to learn whether the approach it developed could serve as an effective school improvement strategy for other districts. State officials encouraged the district to pursue funding through the state to support capacity-building.

Leaders and roles. District leaders had a major role in conceptualizing and designing the initiative. They also provided oversight for implementation and identified ways to sustain and scale the initiative within the district. Prior to the design and development of the initiative, the New York State Education Department played an instrumental role by connecting the district with external technical assistance experts and funding. Once the initiative was launched, state officials assumed an observer role, keeping abreast of implementation progress through regular interactions with the New York Comprehensive Center (NYCC).

Use of external partners. The NYCC and the Assessment and Accountability Comprehensive Center (AACC) helped district leaders frame and design the formative assessment initiative and provided professional development on formative assessment to district staff. Consultants from both centers also supported state education leaders by

The NY–FATA initiative aimed to promote teacher use of formative assessment by providing a variety of professional development offerings year-round. Different types of training and support were offered for teachers, math coaches, district leaders, and state education agency officials

informing them about implementation progress and holding regular training meetings to build state officials’ knowledge and understanding of formative assessment.

Targeted participants. The initiative targeted elementary schools within the district and specific grade levels and content areas within those schools.

- *Targeted schools.* In 2007, district officials met with elementary school principals to inform them of the initiative; principals of 10 of the 20 schools in the district volunteered their schools to be part of the pilot initiative, but only 9 schools continued in the program due to teacher resistance at one of the schools.
- *Targeted grade levels.* The initiative targeted grade 4 and 5 teachers, and participation of teachers at those grade levels was mandatory. At one school, the principal found that kindergarten and grade 1 teachers were more interested in participating than were the grade 4 and 5 teachers, so the school was accepted into the initiative with the participation of the kindergarten and grade 1 teachers instead. After the first year, participation in all schools was expanded to teachers of other grade levels based on teacher interest.
- *Targeted content area.* The initiative promoted the use of formative assessment for math instruction.

Funding. District funding for the three-year initiative came from a federal Title II-B Mathematics and Science Partnership grant administered through the New York State Education Department. NY–FATA was one element of the district’s grant proposal. The grant paid for materials, substitute teachers, and other training-related costs. Professional development provided by the NYCC and AACC for district and state education leaders

was free. The district paid the salaries of math coaches—district staff who are tenured teachers on special assignment and who were in place before NY–FATA started.

Professional development. The initiative aimed to promote teacher use of formative assessment by providing a variety of professional development offerings year-round. Different types of training and support were offered for teachers, math coaches, district leaders, and state education agency officials.

- *For teachers.* In the first year, math coaches—who received training in formative assessment during formal monthly workshops provided by the NYCC—were responsible for immediately transferring their newly acquired knowledge to math teachers in monthly training sessions for grade-level teams of teachers. These sessions mirrored the formal training workshops the coaches had received. In the second and third years, math coaches modified training to address the needs of specific schools and teachers. Individual or small-group coaching was used to impart skills in modifying instruction based on analysis of student work. Coaches modeled lessons using formative assessment practices. Several math coaches also created 30-hour afterschool professional development courses in formative assessment open to teachers across the district (see appendix C for more details).
- *For teacher leaders (math coaches).* With input from district leaders and support from the AACC, NYCC staff provided professional development training to district elementary school math coaches in the theory and practice of classroom-level formative assessment and on how to transfer this knowledge to teachers. Math coaches received training through different formats over three years. During the first two summers, math coaches attended a mandatory summer training institute on formative assessment led by a nationally recognized formative assessment

scholar from the AACC, with support from the NYCC. During the first school year, NYCC staff provided mandatory monthly training workshops to math coaches. During the second year, NYCC staff, district leaders, and other math coaches observed coaches working with teachers in classrooms and provided feedback. During the third year, NYCC staff provided advice and technical assistance to coaches by phone and email, as needed.

- *For principals.* During the first two years of the initiative, principals of participating schools were invited to the summer training sessions.¹ During the school year, principals or their designees were invited to attend meetings every few months with district leaders and NYCC staff, to inform them of progress and solicit their input on initiative implementation.
- *For district leaders.* District leaders participated in the two summer training institutes and the monthly training workshops for math coaches during the first year. District leaders also met regularly with NYCC staff to plan the training for math coaches in the second year and to discuss strategies for implementing the initiative across the district.
- *For state education agency leaders.* During the first two years, state education agency leaders were invited to attend the summer training sessions.² Also during the first two years, NYCC worked with state initiative leaders from the Office of Curriculum, Instruction, and Instructional Technology and other New York State Education Department offices to build a shared understanding of formative assessment and to brainstorm ways the state education agency could support the spread of formative assessment to more districts and schools.

Formal evaluations. Researchers from the State University of New York system evaluated NY-FATA using both quantitative and qualitative

research (a mixed methodology design). Additionally, NYCC and the New York State Education Department produced a white paper on the first two years of the initiative drawing from survey data and the Mathematics and Science Partnership grant evaluation (Tanney et al. n.d.). The white paper concluded that teachers participating in the initiative showed progress in incorporating formative assessment practices into classroom instruction. The white paper also issued recommendations on how the New York State Education Department could spread formative assessment training to other parts of the state. The district school board curriculum committee also requested a report from an external evaluator (it was not available at the time this report was written).

Vermont Formative Assessment Project. The VT-FAP was launched as a pilot in 2006/07 and has become an ongoing initiative led by the Vermont Department of Education.

Goals. As in New York, the Vermont initiative has a mix of program and implementation goals. The primary program goal has been higher student achievement through integration of formative assessment into regular classroom practice. There have been multiple implementation goals. One goal was to establish formal, school-based teacher learning communities (TLCs) to promote school improvement across the state. TLCs are an organizational structure to help teachers build collective responsibility for student learning and to support knowledge of formative assessment. Other implementation goals include spreading formative assessment practices throughout the state and building state capacity to provide training in formative assessment to schools without support from paid vendors.

Origins. VT-FAP grew out of the recognition by a new state commissioner of education and other state education leaders that schools wanted better guidance on how

The primary program goal of VT-FAP has been higher student achievement through integration of formative assessment into regular classroom practice

During the pilot year, VT-FAP targeted teachers at all grade levels and content areas in schools with high concentrations of students from low-income households, but eligibility was later expanded to all interested schools

to design local assessment plans, required by the state since 1997. Aware of the growing research on formative assessment, some state education agency staff recommended that classroom formative assessment serve as the foundation of a comprehensive system of local assessment that includes regular benchmark assessments as well as the annual state assessment. They believed that building teacher capacity for formative assessment

is a core function that the Vermont Department of Education could help serve. The VT-FAP initiative emerged from these discussions.

Leaders and roles. State education agency leaders from the Standards and Assessment Team played a primary role in conceptualizing, designing, and overseeing the initiative. They hired an external consultant to provide basic and train-the-trainer training in formative assessment and hired eight coaches as ongoing professional development facilitators and providers. They also helped to fund training and other initiative costs during the pilot year and have provided training and support throughout the life of the initiative.

Use of external partners. Following a call for proposals for a consultant to help the state train schools and teachers in formative assessment, the Vermont Department of Education selected Educational Testing Service (ETS) as the training consultant and its Keeping Learning on Track (KLT) curriculum as the formative assessment professional development program. ETS staff provided introductory training to teacher groups, coaches, principals, and state education agency staff during the first summer of the pilot year, and they provided train-the-trainer training to coaches and state staff during spring of the pilot year.

Targeted participants. During the pilot year, the initiative targeted teachers at all grade levels and content areas in schools with high concentrations of students from low-income households,

but eligibility was later expanded to all interested schools.

- *Targeted schools.* State education agency leaders began with a small one-year pilot and invited schools receiving Title I school improvement funds to apply. Several non-Title I schools also applied and were accepted because the project budget could accommodate them. Nine schools participated in the pilot. Each participating school recruited teachers willing to commit to the entire two-year³ KLT professional development curriculum—an introductory, multiday summer institute and monthly TLC meetings. Following the pilot year, VT-FAP has been open to all interested schools. Starting in year 3, the Vermont Department of Education also began to target schools designated in need of restructuring under accountability guidelines in the No Child Left Behind Act and schools applying for Mathematics and Science Partnership grant funding (see appendix C for more details). By spring of year 4 (2008), 55 schools were participating.
- *Targeted grade levels.* The initiative was open to teachers of all grade levels in participating schools.
- *Targeted content area.* The initiative was open to teachers of all content areas in participating schools.

Funding. In the pilot year, the Vermont Department of Education paid for ETS services and the services of eight coaches through Title I, Title II-A, and GEAR UP federal funds. In subsequent years, participating schools were required to use local funds to cover summer institute training costs and the costs of KLT workbooks and training materials.

Professional development. VT-FAP has provided consistent introductory and ongoing professional development in formative assessment to teachers since the pilot year. TLC facilitators, principals, district leaders, and state education agency officials have been offered the same form of introductory

training each year, but ongoing training to support the monthly TLC meetings has been less consistent.

- *For teachers.* A mandatory two-day summer institute introduces teachers to the concepts and practices of formative assessment. During the pilot year, summer institute training was delivered by ETS staff, including a formative assessment expert who had helped write the KLT curriculum and had participated in drafting the CCSSO definition. In subsequent years, summer institute training sessions have been delivered by state education agency staff or one of the original eight coaches trained as summer institute trainers. Teachers have received ongoing professional development in formative assessment through monthly TLC meetings that follow the content and structure of the KLT curriculum, and the guidance of a trained school-based TLC facilitator. Because KLT is a two-year curriculum, schools that have continued in VT-FAP beyond year 2 have had the option of continuing their own TLC meetings with their own curriculum.
- *For teacher leaders (TLC facilitators).* Teachers and coaches in participating schools are chosen by their schools to receive TLC facilitator training, which consists of the same two-day summer institute training provided to teachers plus an additional day of specialized training. ETS provided the summer institute training for TLC facilitators during the pilot year, and state education agency staff and the eight original coaches (who served as TLC facilitators during the pilot year) provided training in subsequent years. These eight coaches also received ongoing support during the pilot year through mandatory participation in regular online discussions with their coach peers and regular meetings with state staff. In subsequent years, none of the TLC facilitators has received formal ongoing support in formative assessment or TLC facilitation, although the state has set up online forums for peer support and collaboration.
- *For principals.* Principals of participating schools have been required to attend the

introductory summer training institute. During the pilot year, principals were required to meet twice as a group with the state education agency, and in subsequent years principals of participating schools in restructuring have been required to meet monthly as a group with state officials for support and collaboration on implementation. Other participating principals have not received formal, ongoing support in formative assessment or implementation.

- *For district leaders.* Although participation after the pilot year has been open to all schools and districts in the state, training and support have targeted schools and their staff rather than districts. The initiative has not provided specific training or support for district leaders.
- *For state education agency leaders.* Some 25 Vermont Department of Education officials participated in the initial summer training institute led by ETS, receiving the same two-day training delivered to teachers plus two additional days of training on TLC facilitation. In spring of the pilot year, these state staff and the eight coaches hired by the state received training from ETS as summer institute trainers. This group of state officials and coaches has provided all subsequent summer institute training to new VT-FAP participants. State leaders have not received formal or ongoing support in formative assessment practices or KLT training since the pilot year, although they and coach trainers keep their training skills fresh by leading a summer institute session with other trainers each year.

Formal evaluation. The Vermont Department of Education commissioned an external evaluation of the VT-FAP pilot year (Cole and O'Brian 2007). Based on participant feedback, the evaluation

An external evaluation of the VT-FAP pilot year found that students and teachers had responded positively to the initiative and were in favor of continuing it

found that students and teachers had responded positively to the initiative and were in favor of continuing it. These findings were instrumental in the state's decision to continue the initiative. In year 4, the Vermont Department of Education commissioned a university survey on teachers' experiences with VT-FAP implementation and levels of collaboration in schools undergoing restructuring. At the time of writing this report, results from this survey were not available.

What strategies do state, district, and school leaders report using to support initiative implementation?

Both NY-FATA and VT-FAP were launched to serve multiple program and implementation goals. Interviews with state, district, and school leaders identified several of the implementation goals noted in the literature review by Fixsen et al. (2005): getting teachers to adopt and integrate formative assessment practices into regular instruction, supporting and sustaining teacher use of formative assessment, and spreading or scaling use of formative assessment beyond pilot populations. The strategies used to achieve these three goals were classified into nine categories drawn from the implementation literature (Coburn 2003; Fixsen et al. 2005; Supovitz 2008; table 1) and are discussed below.

1. Provide training from experts and credible evidence of benefits. To rally support, leaders in New York and Vermont provided start-up training from well known formative assessment experts. State and district leaders in New York, through collaboration with the NYCC and AACC, brought in a leading formative assessment scholar to provide foundational training to a pilot group of math coaches, school leaders, and other education officials during the first two summers of the initiative. Vermont leaders, working with ETS, brought in a developer of the KLT program and a recognized expert on formative assessment to introduce formative assessment

strategies and TLCs to a pilot group of state officials, school coaches, principals, and teachers during the summer of the VT-FAP pilot year.

Three of the six interviewees in New York commented that having a known expert provide direct training lent greater credibility to the initiative and fostered buy-in by teachers and administrators. Similarly, three of the six interviewees in Vermont said that the strong reputation of the ETS expert promoted interest, trust, and participation in the VT-FAP initiative. A state and a district VT-FAP leader also suggested that the KLT teacher training curriculum, based on research that educators understood to be reputable and credible, helped teachers develop deeper engagement with formative assessment practices as they learned and worked with these practices over time.

Four of the eight district and school NY-FATA and VT-FAP interviewees also noted that the initiatives included extended forms of training to help teachers gather their own outcome evidence. Both initiatives established teacher training programs that encouraged teachers to try a small number of formative assessment strategies with their own students each month. Teachers observed how the strategies affected student performance, and then during the next month's meeting they discussed the perceived successes and challenges of different strategies. Interviewees said that this approach allowed teachers to directly witness any student gains that emerged from formative assessment practices and that this was an important means of fostering and maintaining interest in the initiative.

2. Create a safe environment for teachers to try out new practices. In both New York and Vermont, interviewees said that initiative leaders encouraged teachers to use formative assessment by creating environments in which teachers could feel comfortable exploring new practices. Three interviewees in New York said that math coaches provided constant support to teachers through coaching, modeling, and co-teaching methods of formative assessment. Math coaches clearly communicated that their work with teachers was not evaluative.

To rally support, leaders in New York and Vermont provided start-up training from well known formative assessment experts, and initiative leaders encouraged teachers to use formative assessment by creating environments in which teachers could feel comfortable exploring new practices

TABLE 1

Implementation strategies used to promote adoption, sustainability, and spread of formative assessment in New York and Vermont, 2007–10

Strategy	Initiative goal			Number of interviewees who identified the strategy					Total number of interviewees (n = 12)
				State		Stakeholder group			
	Adoption	Sustain-ability	Spread	New York (n = 6)	Vermont (n = 6)	State (n = 4)	District (n = 4)	School (n = 4)	
1. Provide training from experts and credible evidence of benefits									
Provide training from recognized experts	✓			3	3	3	2	1	6
Provide research-based training curriculum		✓			2	1	1		2
Show evidence of student gains	✓	✓	✓	2	2		2	2	4
2. Create a safe environment for teachers to try out new practices									
	✓	✓		3	3	1	2	3	6
3. Align reforms with existing contexts and training efforts									
	✓	✓	✓	4	5	3	3	3	9
4. Collaborate early with local leaders									
	✓	✓		4	3	2	4	1	7
5. Employ both voluntary and mandatory participation approaches									
	✓	✓	✓	3	6	2	3	4	9
6. Provide ongoing training and support for teachers and others at different levels of the system									
For teachers		✓		3	5	2	2	4	8
For coaches/teacher leaders		✓	✓	3	4	2	3	2	7
For principals		✓		2	2	1	1	2	4
For district officials		✓		1			1		1
For state officials		✓	✓	2	2	4			4
7. Establish accountability and monitoring methods for sustaining implementation									
		✓		1	4	1	2	2	5
8. Build independent state and district capacity to sustain and spread teacher training									
Use outside experts to train state, district, or school coaches to become trainers		✓	✓	4	3	3	2	2	7
Partner with local organizations to offer more teacher training		✓	✓	3	2	3	1	1	5
9. Harness enthusiasm at every level of the system to sustain and spread initiative, drawing on:									
Students		✓	✓		2		1	1	2
Teachers		✓	✓	2	5	2	3	2	7
Teacher leaders/coaches		✓	✓	3	2	1	4		5
Principals		✓	✓	2	3		3	2	5
District officials		✓	✓	2	1		3		3
State officials		✓	✓	2	3	4		1	5

Source: Authors' analysis and tabulations of coded interview data.

A majority of interviewees in New York and Vermont described ways that state, district, and school initiative leaders aligned efforts to promote formative assessment with existing state and local priorities and other related education improvement activities to facilitate teacher adoption and ongoing use and to spread formative assessment practices and noted the importance of getting local administrators invested in the initiatives

Similarly, three interviewees in Vermont described how VT-FAP leaders tried to encourage and sustain teacher use of formative assessment by creating training climates where it was acceptable to stumble. TLC meetings were designed as forums for teachers to freely share implementation successes and failures. At the school visited for this study, the principal told teachers that they would not be evaluated while they were learning these new practices. She encouraged teachers to take risks and to fail visibly as long as they were learning to use formative assessment over time.

3. Align reforms with existing contexts and training efforts.

A majority of interviewees (4 of 6 for NY-FATA and 5 of 6 for VT-FAP) described ways that state, district, and school initiative leaders aligned efforts to promote formative assessment with existing state and local priorities and other related education improvement activities to facilitate teacher adoption and ongoing use and to spread formative assessment practices. Two interviewees in New York noted that NY-FATA was directly linked to the district's efforts to increase student progress monitoring. Two other interviewees said that NY-FATA training activities complemented efforts to support the pilot district's new math curriculum. An interviewee in Vermont explained that VT-FAP was created to help schools and districts establish one piece of the state's broader vision of a comprehensive system of assessment. Two other Vermont interviewees remarked that VT-FAP complemented the school's earlier efforts to train teachers in developing student learning goals, adopting a schoolwide behavioral intervention program, and teaching a new math curriculum. A New York district interviewee and a Vermont school interviewee also noted that staff had already been primed before the initiative to engage in collaborative training:

New York teachers and math coaches in the pilot district had begun to adopt a collaborative coaching model before the pilot, and teachers in the Vermont school were already meeting in house teams before VT-FAP brought more structured TLCs to the school.

Initiative leaders in New York and Vermont also sought to scale up the initiatives by linking them to other grant and school improvement programs. New York district leaders hoped to spread formative assessment practices to other schools in the pilot district by applying for another round of Mathematics and Science Partnership funding. State leaders in Vermont hoped to spread the initiative to other schools and districts by requiring applicants for Mathematics and Science Partnership grants to implement VT-FAP. Vermont state leaders took the further step of requiring all schools designated as in need of restructuring under No Child Left Behind Act accountability guidelines to adopt either VT-FAP or a program establishing critical friends groups.⁴ Both programs aim to transform teacher professional development and practice by instituting school-based TLCs. State leaders therefore worked to scale up VT-FAP by linking it to the state's menu of options for supporting schools deemed in need of major intervention.

4. Collaborate early with local leadership.

New York and Vermont interviewees at the state and district levels noted the importance of getting local administrators invested in the initiatives so that they in turn would help engage teachers and sustain their interest in using formative assessment. A New York interviewee indicated that the state developed an early partnership with pilot district leaders, whose active involvement in NY-FATA made the initiative possible. Both New York district interviewees said that they launched NY-FATA by speaking first with principals and then by selecting schools whose principals volunteered to join the program. One of the New York school interviewees confirmed that district leaders had many conversations with the school principal to help determine whether NY-FATA was a good fit for the school. She said that the district's

collaborative approach ultimately helped secure the principal's cooperation.

The Vermont Department of Education took a similar approach in launching VT-FAP. One interviewee described how state leaders held a community discussion explaining the initiative to a targeted set of principals and superintendents overseeing Title I schools. Schools were chosen for the VT-FAP pilot based on principals' applications and their commitment to securing teachers' participation in the initiative. Two interviewees noted that principals were required to attend the initial VT-FAP summer institute training to ensure that they understood formative assessment and how to support teachers' efforts to learn to use it through TLCs and ongoing classroom experience. Another interviewee indicated that at the school visited for this study, school leaders worked hard from the beginning to secure the local school board's backing for the VT-FAP initiative to ensure that the community would support the school's formative assessment activities.

5. Employ both voluntary and mandatory participation approaches. New York district leaders and Vermont state leaders originally solicited school participation in their formative assessment initiatives by appealing to school principals to volunteer their schools for the initiative. Once an initial group of principals had committed their schools to the initiative, state, district, and school leaders used a mix of voluntary and mandatory approaches to secure teacher participation and support. A New York district interviewee and a school interviewee noted that participation during the initiative's first year was mandatory for grade 4 and 5 teachers in schools whose principals had volunteered for the initiative. However, as one interviewee explained, strong union rules mean that requirements do not necessarily translate into teacher compliance. To gain teacher buy-in, a school interviewee said that the principal heavily recruited a few teachers, targeting those she believed would be enthusiastic and would attract other teachers. The other school interviewee explained that participation became fully voluntary in subsequent years.

A similar mix of incentives and requirements characterized teacher recruitment in Vermont. In the school visited for this study, a school interviewee and a district interviewee said that school leaders initially solicited teacher volunteers for VT-FAP training. At the same time, these school leaders heavily recruited a few influential teachers they believed would be receptive to the initiative and could help persuade others to participate. Three interviewees explained that the primary approach for spreading VT-FAP across the state was to start with small groups of volunteers and to allow the program to grow organically through positive word of mouth.

At the same time, there were also mandatory pressures for participation. One district interviewee said that many of the principals who volunteered for VT-FAP were in charge of underperforming schools that were required by the state commissioner of education to adopt school improvement measures. Teachers, teacher leaders, and principals that volunteered for VT-FAP had to attend an initial summer training session and participate in TLCs for at least two years. One interviewee noted that during the pilot year, TLC leaders had to participate in regular online community meetings. At the school visited for this study, the principal had made VT-FAP training and participation in TLCs mandatory for all teachers by the third year of the initiative, to spread formative assessment practices throughout the school. Also in the third year, state officials worked to spread VT-FAP across the state by making participation a requirement for Mathematics and Science Partnership grants and one of two mandatory intervention options for schools classified as in need of restructuring.

New York district leaders and Vermont state leaders used a mix of voluntary and mandatory approaches to secure teacher participation and support, and to sustain teachers' efforts to learn and deepen skills in formative assessment, both NY-FATA and VT-FAP established ongoing professional development and provided ongoing training and support for school, district, and state officials to build capacity to support teacher training

6. Provide ongoing training and support for teachers and others at different levels of the system. To sustain teachers' efforts to learn and deepen skills in formative assessment, both NY-FATA and VT-FAP established ongoing professional development. Both initiatives also provided ongoing training and support for school, district, and state officials to build capacity to support teacher training.

Teachers in the pilot district in New York received ongoing training in formative assessment from math coaches through monthly workshops (year 1) and then through voluntary individual or small-group coaching sessions (year 2). Both school interviewees in New York said that teachers who requested coaching in formative assessment received regular, highly individualized support from the math coach. Vermont teachers participating in VT-FAP also received ongoing professional development in formative assessment, but from teacher peers in monthly TLC meetings, the written KLT curriculum, and a trained TLC facilitator. At the school visited for this study, two interviewees noted that the school's professional development coordinator, the principal, and two school-based teacher coaches trained as TLC leaders provided additional support to individual teachers on request as part of their regular instructional support duties.

Teacher trainers received different levels of ongoing support from each initiative. Math coaches in New York received formal, ongoing training in formative assessment and teacher coaching from the NYCC during the first two years. In Vermont, according to two interviewees, the state education agency provided regular support to TLC facilitators during the pilot year through meetings and an online community forum. After the pilot year, the Vermont Department of Education held no more face-to-face meetings with TLC facilitators, and participation

in the online community forum was low. One interviewee said that some educational services agencies had convened mid-year meetings to provide support for trained TLC leaders but that others had not.

Both initiatives provided ongoing support to participating principals, but only NY-FATA provided ongoing support to district and state officials. As reported by two New York interviewees, district leaders and the NYCC provided information about the initiative and advice on implementation to principals during regular group meetings. Two Vermont interviewees said that the state provided support for principals of the original nine pilot schools and of schools under restructuring through regular principal-community meetings. Three interviewees noted that the NYCC also continued to support district and state leaders with planning and future scaling strategies during the first two years. In contrast, two interviewees in Vermont said that the state had been overseeing the development and growth of VT-FAP without ETS support since the end of the pilot year.

7. Establish accountability and monitoring methods for sustaining implementation. Initiative leaders took different approaches in the two states to accountability and monitoring for sustaining initiative implementation. New York interviewees did not describe any direct methods for ensuring that teachers were using formative assessment practices in their classrooms. Rather, one interviewee said the district is subject to numerous audits and requests for data on various district programs from the New York State Education Department. She did not mention any regular data requests other than annual federal Mathematics and Science Partnership grant reporting requirements on overall progress of NY-FATA implementation.

State, district, and school VT-FAP leaders described using more direct methods to monitor formative assessment practices in the classroom. Two interviewees indicated that the Vermont Department of Education actively monitored multiple groups participating in the initiative. For the nine pilot

Initiative leaders took different approaches in the two states to accountability and monitoring for sustaining initiative implementation, but leaders in both states worked to ensure that the formative assessment initiatives would be sustainable and scalable within their jurisdictions without the ongoing involvement of their original external partners

schools and schools under restructuring, the state held principals accountable for supporting formative assessment through monthly meetings at which principals discussed implementation issues. The state did not monitor TLCs directly but contracted a university to conduct a survey of teaching conditions in schools to learn more about how TLCs were functioning. The state tracked student performance by requiring schools under restructuring to publicly report student results on state and local assessments and to submit progress monitoring charts and a support plan for each student who was not reaching standards. Three interviewees in Vermont said that at the school visited for this study, the principal formally held teachers accountable for using formative assessment strategies in their classrooms and that TLC leaders and teachers informally held each other accountable for executing the strategies presented in their monthly TLC action plans.

8. Build independent state and district capacity to sustain and spread teacher training. One interviewee in New York and two in Vermont stated that they worked to ensure that the formative assessment initiatives would be sustainable and scalable within their jurisdictions without the ongoing involvement of their original external partners. During the three years of NY-FATA, New York district leaders turned to expert consultants at the NYCC and the AACC to get as much training and support for math coaches as possible, so that they in turn could support and expand the number of teachers skilled in formative assessment. Both New York school interviewees noted that some math coaches began to take ownership of teacher training in the second year, as several coaches worked together to create an introductory 30-hour professional development course, Formative Assessment 1. This course was offered to teachers in their own schools in year 2 and to all teachers in the district in year 3. One math coach created a follow-up course, Formative Assessment 2, and offered it to teachers across the district in year 3. One of the two district interviewees also reported that math coaches met monthly with a group of districtwide professional development leaders to spread formative assessment knowledge and practices. The aim was to develop a broad group of

teacher coaches who could spread formative assessment practices throughout district schools.

After VT-FAP's pilot year, state education leaders took steps to reduce dependence on ETS consultants. Two interviewees explained that state education leaders asked ETS experts to train a group of state officials and the original eight external coaches to become KLT trainers in spring of the pilot year.

In subsequent years, this group of KLT trainers led the VT-FAP summer training institutes for teachers, TLC leaders/facilitators, and administrators from across the state who were joining the initiative. According to one interviewee, Vermont state leaders also recognized a concern that New York state and district initiative leaders did not discuss: the future need for new KLT trainers because of turnover and attrition in the original corps of trainers. The Vermont Department of Education discussed plans with ETS to teach state education agency staff to train new KLT trainers.

Both initiatives also partnered with local organizations to spread formative assessment practices beyond the original participating schools. Three interviewees in New York noted that the pilot district worked with the district's Teacher Center to offer the Formative Assessment 1 and 2 courses. Similarly, two interviewees in Vermont explained that the state worked with regional educational service agencies to get logistical support in running VT-FAP summer training institutes throughout the state.

9. Harness enthusiasm at every level of the system to sustain and spread formative assessment. Five of the six New York interviewees and all six Vermont interviewees reported that initiative participants helped sustain and spread the initiative through

Five of the six New York interviewees and all six Vermont interviewees reported that initiative participants helped sustain and spread the initiative through their enthusiastic dedication to formative assessment practices and their strong advocacy expressed in formal presentations to other educators in their districts and across the state

Future research will need to examine whether the strategies employed by state, district, and school leaders to promote the sustainability of each initiative can withstand multiple and potentially competing goals and the extent to which leadership by a district or a state education agency affects scalability

their enthusiastic dedication to formative assessment practices and their strong advocacy expressed in formal presentations to other educators in their districts and across the state. A New York interviewee said that teachers in the pilot district organized cross-school meetings to observe and provide feedback on one another's classroom strategies, thus helping support and sustain formative assessment. Another New York interviewee said that teachers promoted NY-FATA by describ-

ing their experiences at statewide conferences. Five Vermont interviewees said that by launching VT-FAP with volunteer teachers, who were more likely to actively engage in training, the initiative established a core group of teachers whose enthusiasm helped persuade others to participate. Two Vermont interviewees also remarked that students helped draw teachers to the initiative, since students exposed to formative assessment in lower grades came to expect it in higher grades as well.

Three New York interviewees and two Vermont interviewees commented on how the work ethic and commitment of teacher leaders (including math coaches in New York and school administrators in Vermont) helped motivate teachers for formative assessment training and attracted new teachers to the initiatives. Two New York interviewees also noted that principals of participating schools, district leaders, and state officials helped spread the word about NY-FATA by speaking about their implementation experiences at state conferences. Similarly, three Vermont interviewees noted how principals' enthusiasm for VT-FAP helped convince teachers to participate. One interviewee remarked that educational services agencies were helping spread the word about formative assessment by advertising VT-FAP training institutes throughout the state, and two interviewees described the active role of the Vermont Department of Education in promoting the initiative. For example, state agency staff gave presentations around the

state about VT-FAP, distributed buttons that read "What's formative about it?" to remind teachers to think about using formative assessment practices, and assigned at least one staff person in the agency to monitor, oversee, and support the initiative.

DISCUSSION

To provide additional insights into the structure and operation of the NY-FATA and VT-FAP initiatives, this section highlights similarities and differences in the primary components of each initiative and in the implementation strategies identified from the literature and the analysis of interview data.

Comparison of the two initiatives

Goals. Both NY-FATA and VT-FAP had multiple goals. Their program goals were similar: to improve student achievement through teacher use of formative assessment practices as part of daily instruction. So were their broad implementation goals: to successfully install, sustain, and spread formative assessment practices beyond pilot sites. Each initiative also had other implementation goals that were sometimes tangential to teacher use of formative assessment and that differed from one another. NY-FATA aimed to help the district achieve day-to-day student progress monitoring, to improve teachers' math content knowledge and pedagogical skills, and to help the New York State Education Department determine whether an initiative focused on building teacher capacity in formative assessment was an effective school improvement model for other districts. VT-FAP was designed not only to build teacher capacity in formative assessment but also to establish TLCs as a means of reorganizing schools and reshaping teachers' professional learning practices across the state.

Multiple program goals raise questions about whether the goals are fully compatible and whether some goals receive greater priority. The possibility of shifting priorities could have implications for teacher training in formative

assessment. For example, a greater desire within the New York pilot district to focus on teachers' math content knowledge could divert energy from building teacher skills in formative assessment. Or the heightened interest in establishing TLCs in Vermont could turn education leaders' focus toward building these structures without a strong formative assessment curriculum component. Future research will need to examine whether the strategies employed by state, district, and school leaders to promote the sustainability of each initiative can withstand multiple and potentially competing goals.

Origins and leaders. NY-FATA and VT-FAP had different origins and different initiative leadership structures and roles. NY-FATA emerged from an individual district's request and formal application to the New York State Education Department for support in developing district capacity to train teachers in formative assessment. The pilot district thus became the NY-FATA leader. The initiative enabled the district to work with the NYCC and AACC to develop a program—almost from scratch—to train teachers in formative assessment. The state education agency played a supporting role by funding NY-FATA and bringing the services of the NYCC and AACC to the district. In contrast, VT-FAP emerged in large part from the Vermont Department of Education's desire to help schools across the state adopt formative assessment. The state became the leader of VT-FAP, choosing an existing professional development program in formative assessment (KLT) and working to seed, sustain, and spread the program statewide.

The different origins and leaders associated with each initiative could have implications for scalability, as the example of NY-FATA and VT-FAP show. Further research is needed, however, on the extent to which leadership by a district or a state education agency affects scalability. NY-FATA, with a pilot district as its leader, focused primarily on building the pilot district's capacity to support teacher use of formative assessment and to spread its use across the district. It placed less focus on how to build such capacity in other districts. The New York State

Education Department was interested in the scalability of NY-FATA statewide, but as an observer of the initiative's development and implementation, it did not actively work to spread the initiative to other districts. In contrast, VT-FAP was launched and led by the Vermont Department of Education, which was interested from the start in a professional development program that could readily be brought to scale statewide. As a result, VT-FAP has spread to schools throughout Vermont.

Use of external partners. Both NY-FATA and VT-FAP relied on external partners for support, but in different ways and with different costs. Through the New York State Education Department, the pilot district in New York drew on the direct and free assistance of the NYCC and AACC for almost the full three years of the initiative. The Vermont Department of Education contracted ETS to use its KLT program, to provide initial summer training in the program, and to train trainers during the pilot year. In subsequent years, Vermont Department of Education staff and other in-state trainers provided the summer training for new participants, while the KLT curriculum—implemented through school-based TLCs—has provided the structure and content of VT-FAP's ongoing professional development program.

These differences in the roles of external partners contribute to different challenges in bringing programs to scale. Because math coaches in the New York pilot district learned to train teachers in formative assessment, math coaches can help spread NY-FATA to other district schools. But because the NYCC and AACC played fundamental roles over several years in developing district math coaches' training skills, NY-FATA may be difficult to replicate in other districts without the assistance of external groups that can help build a corps of district-based trainers. The role of ETS, the VT-FAP external partner, was limited to helping the state

Both NY-FATA and VT-FAP relied on external partners for support, but the two initiatives targeted different participants in different ways and with different costs

develop an in-state corps of summer institute trainers during the pilot year, thus enabling the state to scale up VT-FAP independently in subsequent years. Initiative leaders in Vermont now face a scaling challenge that leaders in New York have not yet confronted: finding a way to replenish and renew its corps of in-state trainers as the original corps loses members and as trainers' skills become stale. At the time of this report, Vermont was considering rehiring ETS to help address this issue.

Targeted participants. The two initiatives targeted different participants. NY-FATA focused on building the capacity of grade 4 and 5 teachers in formative assessment for math instruction during the first year, and participation was expanded to teachers in other grades in subsequent years. VT-FAP had no specific grade or content area focus. New York state leaders worked with a single pilot district while Vermont state leaders, like others in a recent national formative assessment initiative studied by Weinbaum (2009), worked directly with individual schools rather than with districts. The choice among state education leaders to work directly with districts or schools could have different implications for initiative adoption, sustainability, and scale, but the implications are unclear and require further research.

Funding. Different funding sources have different implications for the sustainability and scalability of each initiative. NY-FATA was funded by a three-year federal Mathematics and Science Partnership grant administered by the state; when grant funding ended so did the initiative. The district hopes to spread formative practices to other schools within the district through its corps of trained math

coaches, and it hopes to strengthen scaling activities by applying for another round of Mathematics and Science Partnership funding. The Vermont Department of Education funded the pilot year of VT-FAP drawing on several sources of federal funds. In subsequent years, schools have paid their own way. If the New York district continues

to rely on Mathematics and Science Partnership funding to scale NY-FATA, that could restrict the district's ability to spread formative assessment practices to subjects beyond math and science. The Vermont Department of Education may face a similar issue for some local sites as it makes VT-FAP participation a requirement for Mathematics and Science Partnership grant applicants in Vermont.

Professional development. Both initiatives provided initial and ongoing professional development to teachers in formative assessment, although training came from different sources. Teachers participating in NY-FATA never received direct training from NYCC and AACC staff, whereas teachers who participated in VT-FAP's pilot year summer training institute received direct professional development from ETS experts. Supovitz (2008) has argued that teacher training in school reform efforts may be more effective when the training is delivered by knowledgeable experts who are deeply familiar with reform practices, rather than by trained trainers. It is unclear whether the quality of training that Vermont teachers received from ETS during the first year was different from the quality of training that teachers received from in-state trainers in subsequent years. Similarly, it is unclear how the quality of training that NY-FATA math coaches received directly from NYCC staff may have differed from the quality that teachers received from the math coaches. The NYCC provided direct, formal, and ongoing support to math coaches for the first two years of NY-FATA, whereas ETS provided only a one-time training session for state staff and eight coaches to become summer institute trainers in Vermont. Future research could examine whether extended train-the-trainer efforts delivered by outside experts produce stronger trainers than one-time train-the-trainer efforts.

Formal evaluation. A qualitative review of VT-FAP's implementation and outcomes during the pilot year helped the Vermont Department of Education decide to continue the initiative and to think strategically about scaling. Reports of NY-FATA implementation and outcomes after

Future research could examine whether extended train-the-trainer efforts delivered by outside experts produce stronger trainers than one-time train-the-trainer efforts

years 1 and 2 were presented to state and district staff, but interviewees did not articulate any clear plans emerging from the findings.

Implementation strategies

NY-FATA and VT-FAP both pursued strategies that have been suggested in the literature for promoting program adoption, sustainability, and spread. First, they engaged in careful site selection (see Fixsen et al. 2005; McLaughlin and Mitra 2001; Supovitz 2008). They began site selection by holding preliminary conversations with principals, assessing their levels of interest, and soliciting their participation. Vermont went through a formal site selection process during the pilot year, asking schools to demonstrate their capacity and commitment in written applications.

Second, both initiatives pursued strategies suggested by researchers such as Coburn (2003) and McLaughlin and Mitra (2001) to align goals and activities with existing policies and school improvement efforts. Interviewees indicated that these site selection and alignment strategies were intended to promote teacher adoption, sustained use, and spread of formative assessment practices, but further research is required to determine whether these strategies helped achieve these outcomes.

Third, both initiatives considered whether to work with existing or new communication structures within schools and districts to seed and spread the use of formative assessment among teachers. Research has suggested that such decisions may affect how well new practices diffuse through organizations (Supovitz 2008). In New York, the pilot district chose to have the NYCC transfer knowledge and skills in classroom formative assessment to teachers through an existing group of math coaches. Further research could investigate whether formative assessment training within the pilot district is more effective when delivered by math coaches in special monthly group meetings (used in year 1), as part of regular coaching activities (used in year 2), or in formats involving other trainers. VT-FAP provided ongoing teacher training in formative assessment

through dedicated monthly TLC meetings. One goal of the initiative has been to create TLCs in schools throughout the state. Further research could investigate whether formative assessment practices spread more quickly among teachers through TLCs or through existing school professional development arrangements.

Fourth, NY-FATA and VT-FAP provided ongoing teacher professional development and built teacher support structures, as recommended by researchers (Coburn 2003; Elmore 2004; and Supovitz 2008), to achieve deep and sustained use of formative assessment. Both state education agencies also collaborated early with local school or district leaders to ensure local ownership and ongoing administrator support, as recommended in the literature (McLaughlin and Mitra 2001; Coburn 2003; Elmore 2004; and Supovitz 2008). A strategy recommended by Coburn (2003) that NY-FATA and VT-FAP leaders did not appear to pursue was to build capacity within local sites to create future streams of funding to spread each initiative. District leaders of NY-FATA planned to apply for another round of Mathematics and Science Partnership funding and to use regular district funds to spread formative assessment practices to more teachers and schools using math coaches. State leaders of VT-FAP have asked schools and districts to pay their own expenses after the pilot year. These approaches offer opportunities to scale up initiatives, but they depend on grant availability and school and district funds.

Some of the strategies that initiative leaders described for pursuing common implementation goals expand on strategies described in the literature. For example, interviewees in both states emphasized the value of using expert trainers and credible evidence to promote initiative adoption,

Interviewees in both states described strong efforts to create safe and supportive school cultures to ease the challenges that arise when trying to change fundamental teaching practices and to encourage as much voluntary participation as possible to promote initiative buy-in

sustainability, and spread. Interviewees in both states also described strong efforts to create safe and supportive school cultures to ease the challenges that arise when trying to change fundamental teaching practices. Leaders of both initiatives said that they tried to encourage as much voluntary participation as possible to promote initiative buy-in, and they partnered with local organizations (the Teacher Center in New York's pilot district and educational services agencies in Vermont) to build local scale-up capacity. How effective these strategies are in achieving implementation goals is a question for future research.

Limitations and contributions of this study

The study team interviewed only a small number of respondents and gathered data from only one participating district and one school for each initiative recommended by initiative leaders as sites that had displayed a strong capacity to work with the state or where the initiative had been implemented most fully. Such sites are unlikely to be typical of sites participating in each initiative. Furthermore, the knowledge and opinions

of the two state leaders and the two district and school leaders interviewed in each state might not represent those of other initiative leaders and participants. This study does not provide evidence of the effectiveness of any of these initiatives, their implementation efforts, or the roles of state education agencies in school, teacher, or student outcomes.

This study's main contribution is the detailed descriptions of two state-supported initiatives that promote large-scale teacher use of formative assessment practices as defined by the CCSSO, as well as exploratory ideas for future research and practice. For many teachers, incorporating such practices into daily instruction requires fundamental changes in their approaches to teaching and learning. Researchers have noted the difficulty of achieving such changes, and this study chronicles some of the steps that two initiatives have taken to ease this challenge. Although descriptions of implementation strategies rest on the reports of only a handful of interviewees, they were chosen as likely to be the most knowledgeable informants for each initiative.

**APPENDIX A
STUDY METHODS**

This research study posed two research questions:

- In Northeast and Islands Region states where state education agencies are supporting formative assessment initiatives, what are the primary components of each initiative?
- What strategies do state, district, and school leaders report using to support implementation of formative assessment initiatives?

For the first research question, the primary components examined were:

- *Goals.* Purposes of the initiative from state and local perspectives, including program and implementation goals.
- *Origins.* Description of how the initiative started.
- *Leaders and roles.* In-state public education agencies that helped lead or support the initiative and the roles they played.
- *Use of external partners.* Roles of external partners.

- *Targeted participants.* Types of schools, grade levels, and teacher content areas targeted for inclusion in the initiative.
- *Funding.* State-administered federal grants and local resources supporting the initiative.
- *Professional development.* Types of teacher professional development and training offered to school, district, and state leaders to support initiative implementation.
- *Formal evaluations.* Data collected and reports generated to assess initiative progress and impacts.

For the second research question, the study team interviewed two state, two district, and two school leaders involved in each initiative to gain their perspectives on the strategies they pursued to achieve the initiative implementation goals of adoption, sustainability, and spread.

Project sample selection

Purposive (nonrandom) sampling was used to select state-supported formative assessment initiatives in the Northeast and Islands Region, based on specific criteria (O’Leary 2004; table A1).

TABLE A1
Selection criteria for Northeast and Islands Region state formative assessment initiatives, 2009–10

Criterion	Rationale
1. Identified by the state or an outside organization as a coordinated effort to build capacity in formative assessment within the state	To limit the scope of this project to initiatives with official state recognition and to provide state education leaders with information about formal efforts to which states have devoted staff or other resources
2. Promoted formative assessment practices consistent with the definition of formative assessment established by the Council of Chief State School Officers	To minimize confusion over the concept of formative assessment and limit the scope of the project to initiatives promoting the same set of changes in teaching and learning practices
3. Supported by the state	To examine how state education agencies have helped districts and schools build capacity in formative assessment
4. Unique to the state and not part of a larger national initiative or evaluation	To provide examples of initiatives that jurisdictions in the region are able to implement at the state level
5. Implemented in at least one district within the state for at least one year	To limit data collection to programs with a record of activity that state and local educators can describe and critique

Source: Authors.

To identify initiatives, the study team searched websites linked to state departments of education and online publications provided by regional and national organizations involved with student assessment, such as the New York Comprehensive Center (NYCC) and the Council of Chief State School Officers (CCSSO), using the search term “formative assessment.” Two state-supported initiatives were identified that met the study criteria: the New York Formative Assessment Technical Assistance Study (NY-FATA) and the Vermont Formative Assessment Project (VT-FAP). Public documents describing the practices promoted by these two initiatives helped confirm that both were

using the CCSSO’s definition of formative assessment or a consistent definition (see table B1 in appendix B). Other formative assessment activities in the Northeast and Island Region did not meet the project’s selection criteria (see box A1).

Data on the primary components of each initiative were collected from sources within each state education agency. To develop a more detailed understanding of how each initiative was implemented in specific settings, data were collected from one district and school participating in each initiative. The districts and schools were selected based on recommendations by state and district leaders of each

BOX A1

Examples of initiatives excluded from this study

Public documents suggested that several state-supported initiatives fit the study’s selection criteria, but further examination ruled them out:

- The Connecticut Grade 3–5 Formative Assessment Mathematics Pilot Project began in 2006 with aspirations to support formative assessment practices in Connecticut classrooms but evolved into a benchmark assessment program and was therefore not examined in this report (did not meet criterion 2 in table A1).
- The Connecticut Accountability for Learning Initiative includes training for teachers in collaboratively developing, administering, and scoring instructional responses to group-administered classroom assessments. The program calls this work “common formative assessment,” a type of activity that differs from the Council of Chief State School

Officers (CCSSO) definition of formative assessment (did not meet criterion 2).

- Public documentation describing the Massachusetts Galileo Pilot Project suggested that it has a formative assessment component, but closer examination found the focus to be on providing a computer-based benchmark assessment system to Massachusetts districts. Although the Galileo benchmark system has the capability to support teacher development and use of common formative assessments, the project has not been used to support the CCSSO definition of formative assessment (did not meet criterion 2).
- A search of the New York State Education Department website revealed that the department’s Office of Vocational and Educational Services for Individuals with Disabilities had issued a series of teacher improvement resource guides in 2008 that discuss formative assessment. But the guides

are references rather than a coordinated effort to build capacity in formative assessment within the state (did not meet criterion 1).

- The Rhode Island Department of Education has a page on its website that describes, defines, and encourages formative assessment practices, but the webpage simply provides information and is not evidence of an organized state effort supporting formative assessment (did not meet criterion 1).
- From April 2007 to June 2008, Connecticut and Maine participated in a 10-state initiative and evaluation supported by the CCSSO and funded by the U.S. Department of Education to improve assessment practices in low-performing high schools. The efforts under this initiative do not focus on initiatives that states have implemented within their jurisdiction without the infrastructure or support of a national network of peer collaborators (did not meet criterion 4).

initiative. NY-FATA was implemented in only one district in New York. District leaders were asked to nominate and rank schools for study inclusion, focusing on schools that had implemented the initiative most fully. The most frequently and highly recommended school was invited to participate, and its school leaders agreed. In Vermont, the state education agency worked primarily with schools rather than districts to implement the initiative. State initiative leaders were asked to nominate and rank schools that had implemented the initiative most fully. The most highly recommended school was invited to participate, and its leaders agreed. Table A2 provides background data on the schools and districts examined in this study.

- Publicly available information.* To describe the primary components of each state initiative, the study team consulted public documents and information available online, as well as material from initiative leaders and partners. Online sources included state education agency websites, online education research databases, and vendor or partner organization websites. Information and documents included official statements from each state education agency describing each initiative; progress reports on initiative implementation; interim or summary studies on each initiative conducted by states, districts, or outside partners; materials describing professional development, technical assistance, or other support provided by state education agencies; and initiative descriptions on service provider websites. Information from public documents served as the primary data source for the first

Data sources

The project drew on two data sources to address the research questions:

TABLE A2
State, district, and school background data for the selected sites, 2007-2008

Characteristic	New York			Vermont		
	State	District visited	School visited	State	District visited	School visited
Total number of districts	830	1	na	278	1	na
Total number of schools	4,768	30	1	300	1	1
Total number of teachers	213,242	1,600	40	8,749	50	50
Total number of students	2,714,385	20,000	300	90,000	700	700
Student-teacher ratio	13:1	11:1	9:1	10:1	12:1	12:1
Students eligible for free or reduced-price lunch (percent)	44	75	90	27	50	50
Title 1 eligible	na	na	Yes	na	na	Yes
Student racial composition (percent)						
Hispanic	21	10	50	1.1	2	2
Non-Hispanic Asian ^a	7	2	0	1.7	1	1
Non-Hispanic American Indian and Native Alaskan	0.5	1	2	0.3	0	0
Non-Hispanic Black	19	50	30	1.6	0	0
Non-Hispanic White	52	30	8	94.0	90	90

na is not applicable.

Note: To protect confidentiality, data on districts and schools visited are approximate.

a. Includes non-Hispanic Pacific Islanders.

Source: Authors' analysis based on data from U.S. Department of Education (2008); New York State Education Department (2009a,b); Vermont Department of Education (2008a,b).

research question and was used to reduce missing interview data for the second research question.

- *Interviews.* In pairs assigned to each state, members of the study team conducted semi-structured interviews with two state, two district, and two school leaders for each initiative, using three open-ended interview protocols (see appendix E). Interviews were the primary data source for the second research question and were used to verify data from public documents or to address missing data.

Before being used, each interview protocol was pilot tested and revised based on feedback from two informants (current or former state, district, and school educators familiar with formative assessment initiatives outside this project). These individuals were identified through professional contacts.

Collection methods

Data collection, which started in July 2009 and was completed in January 2010, included selection and review of public documents and interviews with two state-level, two district-level, and two school-level initiative leaders in each state.

Terms such as “formative assessment,” “classroom assessment,” “student assessment,” and the names of each initiative were entered into the search engines of state education agency websites and online education research clearinghouses and databases such as ERIC and Academic Search Premier. Study interviewees were also asked for any documents containing descriptive information about the initiative and its implementation. Documents were examined for data relevant to describing the primary components of each initiative. Data from these documents also provided background information that helped in preparing for interviews.

Public documents and professional contacts were used to identify the director of the state initiative

or the initiative’s main contact. Each leader was invited to participate in an interview, and all agreed. Each leader provided the name of a second state official who was highly knowledgeable about initiative implementation; these officials also agreed to participate. Interviews with state officials were conducted by pairs of researchers in face-to-face formats at state education agency headquarters, and each interview lasted 90–120 minutes. With the participants’ permission, all interviews were digitally recorded and transcribed.

The state initiative leader in New York was asked to recommend at least one official in the district implementing the initiative for an interview. The recommended district official agreed and was asked to recommend a second district official and a key school contact. Both agreed to participate. The key school contact (the principal) was asked to recommend another school leader who was knowledgeable about initiative implementation; this school leader also agreed to participate. In Vermont, the state education agency worked directly with schools to implement the initiative. The state director was therefore asked to recommend key school contacts for interviews. The principal of the most highly recommended school agreed to participate and recommended a second school leader and two district-level leaders—all of whom agreed to participate. Interviews with district and school leaders were conducted in person by pairs of study team members at the district central office or school site. Each district- and school-level interview lasted 90–120 minutes and was digitally recorded and transcribed. A list of the jurisdictions and roles of the final interviewees is in table A3.

Data analysis strategy

Analysis strategies differed for the two research questions.

Research question 1. The study team used a primary components analysis matrix for each initiative to guide data collection and analysis. Target information from the reviewed documents was inserted

TABLE A3
Jurisdiction and role of state, district, and local interviewees, 2009

Jurisdiction	Role
New York	
New York State Education Department	Executive coordinator
	Liaison to district
District	Deputy superintendent
	District field coordinator
School	Principal
	Math instructional support teacher
Vermont	
Vermont Department of Education	Director
	School support coordinator
District	School board member ^a
	Professional development coordinator
School	Principal
	Instructional coach

a. Recommended by the other Vermont district interviewee and the school principal, who explained that other district officials were new to the district and did not have extensive knowledge of the initiative, whereas the district school board member was very knowledgeable about the initiative and its implementation history at the school selected for this study.

Source: Authors.

into the matrix. Data from interviews helped fill in missing information and verify information in public documents. Questions were sent to interviewees to clarify additional missing, unclear, or contradictory information. Data in the completed matrices were compared across the two initiatives to identify common and unique patterns.

Research question 2. All transcribed interviews were coded by three researchers using the qualitative data analysis software package ATLAS.ti. The coding team began by establishing a list of a priori codes, based on the document review and interviews. Using these codes, the three study team members independently coded sections of the same interview. Interrater agreement was calculated by dividing the number of times all three coders assigned the same code to a paragraph of text by the total number of codes or code

categories assigned by the three coders to that paragraph. Percentage agreement for an interview section of multiple paragraphs was calculated by summing the total number of unanimous code use divided by the total instances of individual code use over the span of paragraphs within the interview section. Initial interrater agreement, calculated using an original list of highly detailed a priori codes, was very low (15 percent), prompting several rounds of discussion among the three coders, code clarification and simplification, independent recoding of common interview sections, and recalculation of interrater agreement using a revised list of codes.⁵ This iterative process continued until the coding team reached an interrater agreement level of 92 percent for major code categories and 70 percent for more detailed codes. Appendix F presents the final code list.

The study team used implementation analysis matrices to help analyze coded interview data. The matrices arrayed coded interview data by major categories and by the two initiatives. Data in the matrices were compared across the two initiatives to identify similarities and differences in initiative structure and approach. Common patterns were identified and agreed on through discussion and verification of interview transcript and public document data.

Confidentiality

The study team worked closely with the Institutional Review Board at Education Development Center, Inc. to ensure that interviewees knew their rights as study participants. The team focused on collecting data on policies and practices at the state, district, and school levels and did not request personal information. Interviewees were informed that the study would protect the confidentiality of their responses and signed an informed consent form. The information interviewees provided was kept secure and shared only among the study team. Research data were not labeled with interviewees' real names, and their names were omitted or replaced by pseudonyms in interview transcripts and internal reports.

APPENDIX B

TEACHER PRACTICES PROMOTED BY EACH INITIATIVE

Both the New York State Formative Assessment Technical Assistance Study (NY-FATA) and the Vermont Formative Assessment Project (VT-FAP) promoted formative assessment practices consistent with the Council of Chief State School Officers

(CCSSO) definition (table B1). NY-FATA adopted the CCSSO definition but used descriptions of practices from multiple sources in written training materials. VT-FAP adopted both the definition of formative assessment and descriptions of its practices from Keeping Learning on Track (KLT) program materials, which are consistent with the CCSSO definition. Both sources emphasize the teacher's role and an active student role in student learning.

TABLE B1

Formative assessment definition and practices in the New York State Formative Assessment Technical Assistance Study and the Vermont Formative Assessment Project, 2007–10

Definition and characteristics	New York State Formative Assessment Technical Assistance Study	Vermont Formative Assessment Project
Definition	"A process used by teachers and students during instruction that provides feedback to adjust teaching and learning to improve students' achievement of intended instructional outcomes" (McManus 2008, p. 3).	"Students and teachers using evidence of learning to adapt teaching and learning to meet immediate learning needs minute-to-minute and day-by-day" (Educational Testing Service 2007, p. 25).
Practices	<p>Five attributes</p> <ul style="list-style-type: none"> • Learning progressions clearly articulate the subgoals of the ultimate learning goal. • Learning goals and criteria for success are clearly identified and communicated to students. • Students are provided with evidence-based feedback linked to the intended instructional outcomes and criteria for success. • Both self- and peer-assessment are important for providing students an opportunity to think metacognitively about their learning. • The classroom culture treats teachers and students as partners in learning (McManus 2008). 	<p>Five strategies (Leahy et al. 2005, p. 20)</p> <ul style="list-style-type: none"> • Clarifying and sharing learning intentions and criteria for success. • Engineering effective classroom discussions, questions, and learning tasks. • Providing feedback that moves learners forward. • Activating students as the owners of their own learning. • Activating students as instructional resources for one another.

Source: Authors' analysis based on McManus (2008) and Educational Testing Service (2007).

**APPENDIX C
PRIMARY COMPONENTS OF EACH INITIATIVE**

TABLE C1
Primary components of New York and Vermont formative assessment initiatives, 2007–10

Component	New York State Formative Assessment Technical Assistance Study	Vermont Formative Assessment Program
Duration	A three-year pilot project, from 2007 to 2010.	An ongoing initiative launched in 2006/07. Its first year was considered its pilot year.
Goals ^a	<ul style="list-style-type: none"> • Improve student achievement through teacher use of formative assessment in the classroom. • Establish whether the district could use formative assessment to closely monitor student progress and help teachers analyze and respond to individual student learning needs. • Improve teacher skills in math through professional development in math content and pedagogy and the use of formative assessment in math instruction. • Support formative assessment practices in subject areas other than math. • Build district internal capacity to support teacher use of formative assessment in pilot schools and throughout the district. • Build a shared understanding of formative assessment across different departments of the New York State Education Department. • Help the New York State Education Department learn whether the formative assessment initiative could be an effective school improvement strategy, and if so, build departmental capacity to support teacher use of formative assessment in the pilot district and throughout the state. 	<ul style="list-style-type: none"> • Improve student achievement by supporting the integration of formative assessment into teacher instructional practice. • Support school improvement by establishing teacher learning communities (TLCs), an organizational structure to help teachers build collective responsibility for student learning and, in the context of VT–FAP, to help them build knowledge of and experience with formative assessment. • Support and promote use of formative assessment in schools throughout the state. • Build state capacity to provide basic training in formative assessment to schools throughout the state, without need for support from external partners. • Build state capacity to support a train-the-trainer system to sustain and spread VT–FAP in the event of turnover or attrition within the existing state-based initiative training corps.
Origins	<p>The New York State Education Department encouraged an urban district to apply for Mathematics and Science Partnership grant funding to launch a formative assessment initiative, which would receive technical support from the New York Comprehensive Center (NYCC) and the Accountability and Assessment Comprehensive Center (AACC). The urban district pursued support for this initiative in response to several perceived needs:</p> <ul style="list-style-type: none"> • Better teacher math instruction. • Closer monitoring of student progress to understand and respond to individual student learning needs. • Higher student achievement. <p>The state was interested in learning whether the initiative could serve as an effective school improvement model for districts in the state.</p>	<p>The pilot was launched by the Vermont Department of Education in response to two perceived needs at the local level:</p> <ul style="list-style-type: none"> • Better guidance for designing local assessment plans with a strong foundation in classroom formative assessment. • Higher student achievement. <p>Department staff, based on their reading of the research literature, believed that building teacher capacity in formative assessment could provide a strong foundation for improving student learning.</p>

(CONTINUED)

TABLE C1 (CONTINUED)

Primary components of New York and Vermont formative assessment initiatives, 2007–10

Component	New York State Formative Assessment Technical Assistance Study	Vermont Formative Assessment Program
Leaders and roles		
State education agency	<p>New York State Education Department, Department of Curriculum, Instruction, and Instructional Technology:</p> <ul style="list-style-type: none"> • Brokered the relationship between district leaders and external partners. • Identified initiative funding. • Observed implementation. • Received NYCC and AACC technical assistance to build shared understanding of formative assessment within the state education agency and to consider policies and practices that would support the spread of formative assessment, as defined by the Council of Chief State School Officers (CCSSO), to other districts. 	<p>Vermont Department of Education Standards and Assessment Team:</p> <ul style="list-style-type: none"> • Designed the initiative. • Provided oversight. • Selected an external partner to provide professional development for school-based groups of teachers, school administrators, and state staff. • Hired eight coaches to serve as TLC facilitators for the pilot year. • Provided summer institute training through state staff and the eight coaches for new groups of TLCs, principals, and other local administrators starting the second year. • Collaborated with educational services agencies—partnerships among school districts, unions, institutions of higher education, and service providers to offer professional development to meet the regional needs of educators—to organize logistics of summer institute trainings.
District	<ul style="list-style-type: none"> • Conceptualized and designed the initiative with NYCC staff. • Provided oversight of the initiative at the district level. • Worked to tie the initiative into ongoing district supports for teachers. 	
External partners	<p><i>New York Comprehensive Center (NYCC)</i></p> <ul style="list-style-type: none"> • Helped the district design the initiative (with support from the Assessment and Accountability Comprehensive Center). • Developed math coach training with district input. • Provided technical assistance to state officials and district leaders. <p><i>Assessment and Accountability Comprehensive Center (AACC)</i></p> <ul style="list-style-type: none"> • Provided access to a national expert to help the NYCC develop its role in the initiative. • Helped the NYCC facilitate two summer institutes and occasional training sessions during the school year. 	<p><i>Educational Testing Service (ETS)</i></p> <ul style="list-style-type: none"> • Designed the professional development program Keeping Learning on Track (KLT), a two-year, 16-module training curriculum in formative assessment for TLCs. • Provided an introductory summer training institute during the pilot year for state staff, the eight coaches who would serve as TLC facilitators, and participating teacher groups. • Trained state staff and the eight coaches during spring of the pilot year to serve as summer institute trainers.

(CONTINUED)

TABLE C1 (CONTINUED)

Primary components of New York and Vermont formative assessment initiatives, 2007–10

Component	New York State Formative Assessment Technical Assistance Study	Vermont Formative Assessment Program
Targeted participants		
Targeted schools	<ul style="list-style-type: none"> District leaders invited elementary school principals in the pilot district to participate; 10 principals volunteered their schools. Nine schools participated; one school did not participate because of teacher resistance. 	<ul style="list-style-type: none"> State invited Title I schools to participate in the pilot. Several non–Title I schools also applied and were accepted because the project budget was able to accommodate them. Nine schools participated in the pilot year. Since year 3, participation has been encouraged or required for: <ul style="list-style-type: none"> Schools in restructuring under the No Child Left Behind Act (11 schools in 2008) are required to participate in VT–FAP or adopt another school intervention program (Critical Friends Groups). Schools in districts that apply for the state-administered federal Title II-B Mathematics and Science Partnership grant are required to include VT–FAP participation in their applications. By spring of year 4, VT–FAP was active in 55 schools.
Targeted grades	<ul style="list-style-type: none"> Year 1: Grades 4 and 5 (one participating school instead targeted kindergarten and grade 1). Years 2 and 3: Grades 4 and 5 no longer the exclusive focus; grade levels varied by school. 	Open to teachers of any grade level (K–12).
Targeted content area	Math	All content areas.
Funding		
	<ul style="list-style-type: none"> Title II-B Mathematics and Science Partnership. NY–FATA was one component of a larger initiative supporting math content knowledge and pedagogy. 	<ul style="list-style-type: none"> Year 1: Title I, Title II-A, and GEAR UP. Year 2 and after, local funds cover summer institute costs, including materials, space, and trainer if no state trainer is available.

(CONTINUED)

TABLE C1 (CONTINUED)

Primary components of New York and Vermont formative assessment initiatives, 2007–10

Component	New York State Formative Assessment Technical Assistance Study	Vermont Formative Assessment Program
Professional development		
Teachers	<p><i>Summer institute providers:</i> NYCC and AACC, but teachers did not participate in the year 1 and 2 summer institutes.</p> <p><i>Ongoing training/support providers:</i> Math coaches trained by the NYCC.</p> <p><i>Training/support content:</i></p> <ul style="list-style-type: none"> Year 1: Content delivered in monthly group meetings covered background, theory, and classroom strategies of formative assessment. Content delivered by math coaches mirrored the content they had learned from the NYCC the previous month. Years 2 and 3: Content varied by teacher need. <p><i>Nature and structure of training/support:</i></p> <ul style="list-style-type: none"> Year 1: Mandatory participation by grade 4 and 5 teachers (in eight schools) and kindergarten and grade 1 teachers (in one school) in monthly two-hour group meetings with the school math coach. Years 2 and 3: Teachers received training through one of two formats: <ul style="list-style-type: none"> Voluntary one-on-one or small-group work with school math coach, as needed or as part of an action research project for teachers' yearly evaluation. Voluntary enrollment in a 30-hour after-school course developed by district math coaches. Formative Assessment 1 covered basic concepts of formative assessment; Formative Assessment 2 covered formative assessment classroom strategies. Courses were administered through the district's Teacher Center. 	<p><i>Summer institute providers:</i></p> <ul style="list-style-type: none"> Year 1: ETS. Year 2 and later: State staff or one of the eight original coaches trained as summer institute trainers. Institutes have been organized and administered through regional educational services agencies. <p><i>Ongoing training/support providers:</i> TLCs.</p> <ul style="list-style-type: none"> Year 1: TLCs in participating schools were facilitated by one of the eight coaches hired by the state. Year 2 and later: TLCs facilitated by school-based teachers or coaches trained the previous summer to serve as TLC facilitators. <p><i>Training/support content:</i></p> <ul style="list-style-type: none"> Summer institute introduces participants to the background, theory, and research behind formative assessment and strategies for its practice in the classroom, and to TLCs and the KLT curriculum. Content of monthly TLCs follows the KLT program curriculum: 16 modules over two years. <p><i>Nature and structure of training/support:</i></p> <ul style="list-style-type: none"> Mandatory participation in an introductory summer training session (two days). Mandatory participation in monthly TLCs for two years. After two years, TLCs can continue to meet and follow their own curriculum at their discretion.

(CONTINUED)

TABLE C1 (CONTINUED)

Primary components of New York and Vermont formative assessment initiatives, 2007–10

Component	New York State Formative Assessment Technical Assistance Study	Vermont Formative Assessment Program
<i>Professional development (continued)</i>		
Teacher leaders	<p><i>Audience:</i> Math coaches.</p> <p><i>Summer institute providers:</i> NYCC and AACC.</p> <p><i>Ongoing training/support providers:</i> NYCC (with occasional support from the AACC); math coach peers.</p> <p><i>Training/support content:</i></p> <ul style="list-style-type: none"> • Summer institute introduces participants to the background, theory, and research behind formative assessment and to strategies for its practice in the classroom. • Year 1: Ongoing training in formative assessment concepts and strategies from the NYCC and on how to transfer this knowledge to teachers. • Year 2: Feedback from NYCC consultants and math coach peers after observations of individual math coaches’ work with teachers in classrooms. • Year 3: Content varied by individual math coach need. <p><i>Nature and structure of training/support:</i></p> <ul style="list-style-type: none"> • Mandatory participation in summer training institutes in year 1 (one day) and year 2 (two days). • Year 1: Mandatory monthly meetings with NYCC to gain basic training in formative assessment and in how to transfer this training to teachers. • Year 2: Mandatory monthly or bimonthly meetings with NYCC and math coach peers, to observe and receive feedback on coaching efforts with teachers in classrooms. • Year 3: Voluntary informal support available from the NYCC by phone or email as needed. 	<p><i>Audience:</i> TLC facilitators.</p> <p><i>Summer institute providers:</i></p> <ul style="list-style-type: none"> • Year 1: ETS • Year 2 and later: A state staff member or one of the eight original coaches trained as KLT trainers. Institutes have been organized and administered through regional educational service agencies. <p><i>Ongoing training/support providers:</i></p> <ul style="list-style-type: none"> • Year 1: The eight coach peers, with oversight from the state. • Year 2 and later: TLC facilitator peers. <p><i>Training/support content:</i></p> <ul style="list-style-type: none"> • Summer institute training introduces participants to the background, theory, and research behind formative assessment and to strategies for its practice in the classroom. TLC facilitators also receive training in how to lead TLCs through the KLT curriculum over the next two years. • Year 1: Ongoing reflections and discussions about TLC leadership and issues encountered during initiative implementation. • Year 2 and later: Content varies by individual TLC facilitator need. <p><i>Nature and structure of training/support:</i></p> <ul style="list-style-type: none"> • Mandatory participation in a two-day summer training institute and an additional day of training for TLC facilitators (two days during the pilot year). • Year 1: The eight coaches hired as TLC facilitators were required to participate in a state-moderated online community and to meet face-to-face several times during the year. • Year 2 and beyond: School-based TLC facilitators can meet voluntarily and collaborate with peers through an state-moderated online community. Some educational services agencies have held mid-year meetings for TLC facilitators to provide opportunities for peer support.

(CONTINUED)

TABLE C1 (CONTINUED)

Primary components of New York and Vermont formative assessment initiatives, 2007–10

Component	New York State Formative Assessment Technical Assistance Study	Vermont Formative Assessment Program
Professional development (<i>continued</i>)		
Principals	<p><i>Summer institute providers:</i> NYCC and AACC.</p> <p><i>Ongoing training/support providers:</i> District officials with NYCC.</p> <p><i>Training/support content:</i></p> <ul style="list-style-type: none"> • Content of summer institute training same as for math coaches. • Support provided during periodic meetings held by district leaders and NYCC includes updates on initiative implementation. Other topics vary according to the issues principals raise. <p><i>Nature and structure of training/supports:</i></p> <ul style="list-style-type: none"> • Optional participation in year 1 and 2 summer training institutes and initiative information sessions. • Optional periodic meetings of principals or designees with district and NYCC, to stay informed about the initiative and discuss issues of concern to principals. 	<p><i>Summer institute providers:</i></p> <ul style="list-style-type: none"> • Year 1: ETS. • Year 2 and later: A state staff member or one of the eight original coaches trained as KLT trainers. Institutes have been organized and administered through regional educational services agencies. <p><i>Ongoing training/support providers:</i> State leaders and fellow principals participating in mandatory state meetings.</p> <p><i>Training/support content:</i></p> <ul style="list-style-type: none"> • Content of summer institute training the same as for teacher groups and TLC facilitators. • Support during regular meetings held by state varies according to the issues principals raise. <p><i>Nature and structure of training/supports:</i></p> <ul style="list-style-type: none"> • Mandatory introductory summer training (two days). • Mandatory meetings with state education agency for principals or designees of nine original pilot schools (year 1) and for schools in restructuring (year 3 and later) for support and communication about the initiative.
District leaders	<p><i>Summer institute providers:</i> NYCC and AACC.</p> <p><i>Ongoing training/support providers:</i> NYCC.</p> <p><i>Training/support content:</i></p> <ul style="list-style-type: none"> • Content of summer institute training same as for math coaches and principals. • Regular meetings with NYCC at end of year 1 focused on designing year 2 training and support for math coaches as well as ongoing development of the overall initiative. <p><i>Nature and structure of supports:</i></p> <ul style="list-style-type: none"> • Years 1 and 2: District leaders voluntarily participated in summer institutes and monthly training sessions held by the NYCC for math coaches. • Periodic meetings with NYCC staff to develop the initiative. 	<p>No special professional development, training, or support for district leaders. Summer institute training is available to all educators in the state wishing to participate.</p>

(CONTINUED)

TABLE C1 (CONTINUED)

Primary components of New York and Vermont formative assessment initiatives, 2007–10

Component	New York State Formative Assessment Technical Assistance Study	Vermont Formative Assessment Program
<i>Professional development (continued)</i>		
State leaders	<p><i>Summer institute providers:</i> NYCC and AACC. <i>Ongoing training/support providers:</i> NYCC. <i>Training/support content:</i></p> <ul style="list-style-type: none"> • Content of summer institute training same as for math coaches, principals, and district leaders. • Regular meetings with NYCC cover the theory and research behind formative assessment. Discussions also involve strategies for scaling the initiative to other districts. <p><i>Nature and structure of supports:</i></p> <ul style="list-style-type: none"> • Years 1 and 2: State leaders were invited to participate in summer training institutes. A working group of state leaders from different departments in the New York State Education Department also attended regular meetings with the NYCC. 	<p><i>Summer institute providers:</i> ETS (year 1 only). <i>Spring training session providers:</i> ETS (year 1 only). <i>Ongoing training/support providers:</i> None. State officials and coaches trained as summer institute trainers try to keep their training skills fresh by leading a summer training institute with other in-state trainers each year. <i>Training/support content:</i></p> <ul style="list-style-type: none"> • Content of summer institute training in year 1 the same as for the eight coaches hired by the state as TLC facilitators. • Year 1: Spring training session trained state leaders and the eight coaches as summer institute trainers. These staff learned to deliver the same training that ETS had provided to them the previous summer. State staff and the eight coaches were also trained to train teachers and school-based coaches as TLC facilitators. <p><i>Nature and structure of supports:</i></p> <ul style="list-style-type: none"> • Year 1: Summer institute training lasted two days for all participants and an additional two days for state staff (approximately 25 attended) and the eight coaches.
<i>Formal evaluations</i>		
	<ul style="list-style-type: none"> • “Title II-B Mathematics and Science Partnership: Year One Report, 2007–08” (Evaluation Consortium, University at Albany–SUNY, 2008). • “New York Formative Assessment Project: From Research to Practice” (New York Comprehensive Center, 2009). • Upcoming evaluation for the district board curriculum committee (no date available) by an external evaluator. 	<ul style="list-style-type: none"> • External consultants conducted a qualitative evaluation of the pilot year implementation, to inform continuation of the project. Findings have been published by the Vermont Department of Education on its website (Cole and O’Brian 2007). • For participating schools undergoing restructuring, the Vermont Department of Education has commissioned a survey from an outside university to examine teachers’ experiences with implementation of the initiative and levels of collaboration.

a. Perspectives revealed through public sources, interviews, and documents provided by state, district, and school interviewees. Goals listed do not include the perspectives of external initiative partners, which were not examined in this study.

Source: Compiled by authors from public sources, interviews, and documents provided by interviewees, as described in the text.

APPENDIX D

RESEARCH CONTEXT ON FORMATIVE ASSESSMENT

This overview briefly describes the literature on formative assessment, including research on the relationship between formative assessment and student learning, difficulties promoting its use among teachers, and strategies to promote sustained and widespread use.

Defining formative assessment

Formative assessment has become a “buzzword in education” (McMillan 2007, p. 1) as the use of large-scale assessments has increased and formative assessment has been proposed as a means of raising student achievement (Black and Wiliam 2003; Chappuis and Chappuis 2007/2008; McManus 2008; Tanney et al. n.d.). However, educators have used vague and inconsistent definitions of formative assessment (Black and Wiliam 1998a; Chappuis and Chappuis 2007/2008). The CCSSO convened state education agency leaders and experts in formative assessment to bring greater clarity to the topic. They arrived at the following consensus 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 (McManus 2008, p. 3).

This definition, applicable to a wide spectrum of practices, emphasizes formative assessment as an ongoing process that is embedded in instruction and that provides evidence to inform changes in instruction (McManus 2008). Central to this definition is the notion that “learning requires active and frequent interaction between teachers and learners” (Black et al. 2004, p. 47). The definition also points to an active role for students. Through classroom discussions and self- and peer-assessment activities, formative assessment can help students feel more responsible for their own learning (McManus 2008).

Formative assessment differs from other types of assessment in being an ongoing process rather than a singular event (McManus 2008), requiring active exchange between teachers and students (Black et al. 2004), and leading teachers to adapt instruction to student needs (Black and Wiliam 1998a). Thus, how teachers use assessment data is critical. Black and Wiliam (1998a) argue that any assessment may provide information to guide classroom instruction but that assessment is formative only “when the evidence is actually used to adapt the teaching to meet student needs” (para. 7). Formative assessment activities must provide data that identify a student’s status in relation to a specific learning goal and the steps the student can take to reach it (Heritage 2007; Wiliam and Leahy 2007). In contrast, summative assessments are generally administered at the end of a specific unit of time to “evaluate a student’s performance against a defined set of content standards” (Perie et al. 2007, pp. 1–2). Some researchers argue that other practices sometimes classified as formative are more accurately labeled interim, frequent, benchmark, predictive, or early warning summative assessment (Black and Wiliam 2005; Chappuis 2005; Perie et al. 2007). They may provide feedback for adjusting instruction but do not involve classroom-based interactive instructional assessment strategies.

Evidence of the effects of formative assessment

Evidence suggests that classroom-based formative assessment can promote student learning if properly implemented (Black and Wiliam 1998a; Furtak et al. 2008). Some studies have associated formative assessment with the development of metacognitive skills as well as greater learning in math and science (Assessment Reform Group 2002; Shepard et al. 2005; Wiliam 2007). A randomized controlled trial study of “running records,” a formative assessment technique in literacy instruction, showed statistically significant increases in student achievement compared with use of a nonformative assessment intervention (Ross 2004).

Other research suggests that formative assessment may produce greater increases in student achievement—at a lower cost—than smaller class sizes or greater teacher content knowledge (William and Thompson 2007). A study comparing the cost-effectiveness of different intervention models suggests that for every dollar spent on interventions, student outcomes in reading and math are greater for rapid assessment than for comprehensive school reform and high-quality preschool (Yeh 2008).

Despite the positive findings, researchers (Black and Wiliam 1998a; Furtak et al. 2008; Shepard 2005; Yin et al. 2008) caution that simply embedding formative assessment into the curriculum is not enough; teachers need support and professional development, and success depends on the context in which the practice is implemented. They also caution that much of the evidence comes from laboratory and anecdotal studies and that studies with an experimental design in regular classroom settings are lacking (Black and Wiliam 1998a; Yin et al. 2008).

Implementation challenges

Engaging in formative assessment may require a shift in attitudes about teaching and learning, away from traditional views of teachers as transmitters and students as recipients of knowledge. Students participating in classroom formative assessment learn through inquiry and exchange in partnership with teachers and other students (Black et al. 2004; Black and Wiliam 1998b; Heritage 2007). Many teachers must also learn to construct and interpret assessments, to teach students to assess their own work and set their own learning goals, to shift from correcting to informing students, and to use effective questioning to engage student thinking (Black and Wiliam 1998a; Brookhart 2007; Chappuis and Chappuis 2007/2008; Heritage 2007; Moss and Brookhart 2009). Teachers must also learn to use information collected from students to identify instructional approaches that meet student needs (Heritage et al. 2009).

Changing teachers' basic conceptions of the roles of teachers and students and their basic methods of instruction is difficult (Elmore 2004), as is acquiring specific formative assessment skills (Heritage et al. 2009; Moss and Brookhart 2009). Furthermore, education leaders trying to promote formative assessment through organized programs face common implementation challenges in program adoption, sustainability, and spread (see box D1). Promoting formative assessment therefore requires not only changing fundamental teaching and learning practices in individual classrooms, but also building organizational structures to help execute and scale up formative assessment practices.

Strategies to promote and spread fundamental changes in teaching and learning

Because formative assessment often requires fundamental shifts in teaching and learning, and because research suggests that engineering such shifts in lasting ways has been elusive (Elmore 2004), promoting formative assessment may require initiatives that address scale and sustainability from the start. Strategies that may facilitate program adoption, sustainability, and scaling among teachers and school administrators include:

- *Selecting sites carefully.* The likelihood of engaging teachers and school leaders in education reform initiatives rises when reform leaders and designers choose implementation sites that take reforms seriously and have the capacity to support reforms after involvement by external partners ends (Fixsen et al. 2005; McLaughlin and Mitra 2001; Supovitz 2008). Strong implementation sites are generally those where teachers and administrators agree on the fundamental problems in teaching and learning and see the proposed reforms as a good match for solving them (Supovitz 2008).
- *Aligning initiatives and school or district policy.* Schools and districts are often buffeted

BOX D1

Implementing new programs

A review of research in several fields identifies multiple stages to program implementation: adoption, initial implementation, full operation, innovation, and sustained implementation (Fixsen et al. 2005). Program adoption and initial implementation can be impeded by “fear of change, inertia, and investment in the status quo combine[d] with the inherently difficult and complex work of implementing something new” (p. 16). Reaching full operation requires helping staff and organizations integrate new learning into daily practices and routines. During the innovation stage, program leaders must learn to recognize and minimize deviations from

core practices that could undermine desired outcomes, while allowing innovations that facilitate full program operation. During the final phase of implementation, program leaders must tackle threats to program sustainability, from turnover of staff to changes in organizational leadership, program funding, and community priorities (Fixsen et al. 2005).

Achieving sustainability and scaling up programs are often related. Researchers frequently refer to scaling up as extending a program to populations and sites beyond initial pilot groups, to benefit as many people as possible (Fixsen 2009; Fixsen et al. 2009). Some researchers suggest that program scaling requires attention to issues such as depth, sustainability,

and ownership of program implementation as well as total numbers of target groups adopting the program (Coburn 2003; Fixsen 2009; McLaughlin and Mitra 2001). Education leaders who wish to extend education reforms both broadly and deeply therefore face multiple challenges, such as getting larger organizational systems (like schools, districts, and states) to incorporate reform principles into their regular norms of practice, providing individuals at all levels of the system with opportunities to learn and develop new reform skills, procuring adequate resources to support program expansion, and building capacity within local sites to lead, manage, and assume responsibility for ongoing program implementation (Coburn 2003; McLaughlin and Mitra 2001).

by competing initiatives and priorities, which can dissuade teachers and administrators from adopting and supporting reforms. While reform leaders may wish to choose receptive implementation sites, they may also wish to work with school and district officials to identify how proposed reforms and existing policies and initiatives can complement each other (McLaughlin and Mitra 2001). Aligning reform practices and existing priorities may help convince school and district leaders to support the reform (Coburn 2003).

- *Working with school and district communication channels.* Existing networks and organizational structures (such as grade-level teams, professional learning communities, and webs of informal relationships) may be important sources of professional information, influence, and ongoing learning for teachers. To assess whether support for reforms will be most effective through new or existing community structures, reform leaders may need to understand how ideas and practices spread within particular settings. The channels through which reforms enter an organization could affect how reforms are adopted, adapted, and sustained (Supovitz 2008).
- *Providing ongoing professional development and support.* Achieving deep, sustained, and pervasive teacher change may require ongoing professional development, new teacher support structures, and expectations for practice that extend across levels of the education system (Elmore 2004). Detailed guidance materials, a community of supportive peers, and knowledgeable leaders who are supportive of teachers’ change efforts may be especially important when reforms are complex and changes to teacher practice are fundamental (Coburn 2003; Supovitz 2008). Ongoing teacher training may be most effective when trainers are deeply knowledgeable about the initiative’s principles and practices (Supovitz 2008).
- *Developing local leaders to support and spread the initiative.* District and school leaders play

an important role in reform implementation by aiding reform efforts and communicating the importance of adopting and sustaining change (Supovitz 2008). If reform leaders are from outside the districts and schools, research suggests that these external partners can help to build capacity among local leaders to carry on the reform independently over the long term (Coburn 2003; McLaughlin and Mitra 2001). Building such capacity may include clearly delineating initiative roles and responsibilities for school and district administrators from the beginning, modeling how to incorporate reform principles and practices into local leaders' own work and broader education policies, and developing a group of knowledgeable teacher leaders who can train and provide ongoing support to teachers in using reform practices (Coburn 2003; Supovitz 2008).

- *Securing ongoing funding.* Once initial program funding ends, ongoing funding is needed to train and support teachers and administrators who are working to change teaching and learning practices. Additional funding may also be needed to spread reform practices beyond initial sites. Reform leaders may want to build local capacity to develop future streams of funding to support and expand reform practices (Coburn 2003).

How state education agencies can promote formative assessment

Since formative assessment is embedded in daily instruction (Wiliam and Leahy 2007), it is reasonable to ask what state education agencies can do to promote formative assessment practices at the school and classroom level (Black and Wiliam

2003; Darling-Hammond and McLaughlin 1995; Stiggins 2002; Tanney et al. n.d.). To meet the No Child Left Behind Act goal of proficient performance on state assessments for all students by 2014, state education agencies need to find ways to improve the performance of low-performing districts and schools, a departure from their traditional roles of disbursing grants and monitoring compliance with federal requirements (Lusi 1997).

State education agencies may need to build their own capacities to support effective instruction and professional development and to adopt new ways of communicating and working with districts and schools to assist with school improvement efforts (Sunderman and Orfield 2006). To initiate, design, and lead formative assessment or other classroom-level reform efforts, states may need to acquire the resources to execute new functions. They can identify and secure the assistance of strong external partners to provide schools and districts with the expertise and training to implement reforms (Lusi 1997), connect schools and districts to help them share and learn from one another's experiences (Perie et al. 2007), and provide traditional supports. Supports may include allocating federal funds and requesting legislative funding to reinforce change (Perie et al. 2007); monitoring, evaluating, and conducting research on reform implementation (Black and Wiliam 1998b); and establishing state-defined learning standards or grade-level expectations to guide assessment activities (Perie et al. 2007). Many states also have the opportunity to influence policies that affect implementation of formative assessment. For example, as authorizers of higher education teacher training programs, state education agencies may be able to ensure the integration of formative assessment into preservice programs (Rindone and MacQuarrie 2010).

APPENDIX E INTERVIEW PROTOCOLS

This appendix contains the protocols used for interviews with state, district, and school initiative leaders in New York and Vermont.

State initiative leaders

Introductory script

Note: recorder should be on if consent granted

Thank you for agreeing to speak with us today about your state's efforts to promote formative assessment.

We are . . . [introduce selves].

We understand that your state has launched an effort called the _____ project. Our goals for this interview are to learn about:

- a. the goals of the _____ project;
- b. the types of efforts the state has made to implement or support the _____ project; and
- c. how effective you think state and local efforts have been to implement the _____ project.

Do you have any questions before we begin?

I. Individual background

First, some questions about you.

1. What is your role in the state education agency (SEA)?
2. How did you personally get involved with the _____ project?
3. How does your work for the _____ project relate to your other state responsibilities?

II. Project goals

Now, we would like to learn more about the _____ project.

4. What is the working definition of "formative assessment" that the state is using for your project?

Probes:

Under this definition, what roles do teachers play in formative assessment?
Students? Parents?

5. How did the state arrive at its working definition of formative assessment?
6. What would you say are the main goals of the _____ project?

Probe:

What were the original motivations for launching the project?

7. What evidence does or will the state use to determine whether the project is a success?
8. How is this project related to other state assessment, instruction, or other school improvement efforts?

III. Methods and opinions of project implementation

9. *Restate the project goals they identified earlier.* To what extent do you think these goals have been achieved?
10. In the following series of questions, I'm going to ask you to describe how the state has implemented the project, and how well you think different implementation efforts have worked.

What efforts has the state used:

- a. To reach a shared understanding of formative assessment practices?
 - i. How well do you think these implementation efforts have worked?

Discuss each effort separately.

At end, ask: Which methods worked very well, moderately well, or not so well?

- ii. In your view, what factors have led these efforts [list which ones] to work very well?
- Repeat for efforts listed under moderately well and not so well.*
- b. To promote the types of assessment practices the state would like to see within classrooms? [within target content areas, grade levels; at desired scale]
- Probe, if not discussed:* What has the state done to promote formative assessment, as defined by the CCSSO? (which involves more constant assessment and adjustments in instruction)
- c. To establish and maintain the project's schedule or timeline?
- d. To fund the project?
- e. To provide professional development and/or technical assistance for the project?
- f. To monitor and/or evaluate the project?
11. We'd like to ask a few more questions about support provided for the project, focusing on professional development and technical assistance, whether facilitated by the state or external partners.
- a. What has been the content of professional development for the project?
- Provide examples if needed, e.g., how to ask good questions, how to provide feedback, how to find time to conduct formative assessment.*
- b. Who have been the target audiences for professional development?
- c. What has been the structure of professional development?
- Probe both for when, e.g., during or outside school day/year, and format, e.g., workshops; in-class coaching.*
12. We also have a couple questions about technical assistance for the project.
- a. What types of technical assistance has the state (and external partners, if relevant) provided for the project?
- Provide examples if needed, e.g., data management, data analysis.*
- b. Who have been the target audiences for technical assistance?
- IV. Project participants*
- We would like to learn who is involved in this project and how they became involved.
13. How did your department or office in the SEA get involved with the project?
- Probe if not discussed:* Is the state involved in supporting formative assessment practices outside this project?
- If yes:* Can you describe these efforts? How did the SEA get involved in them?
14. What other offices in the SEA have collaborated on this project?
15. What other organizations, outside the SEA, have collaborated in this project?
16. How did districts or schools come to participate in this project?
- Probe if not discussed:* Is participation related to a district or school's No Child Left Behind

status (i.e., whether they are in corrective action)? If yes, please explain.

17. How engaged have participating districts and schools been in this work around formative assessment?

Follow up with:

- Please describe the ways in which participating districts and schools have been engaged.
- In your mind, what factors have contributed to greater district and school engagement?

V. Participant roles

We are interested in learning more about the guidance and support the state has provided for this project, and the roles played by other participants.

If SEA has worked with external partners, ask Q18. Otherwise, skip to Q19.

18. How has the SEA worked with external partner organizations to support formative assessment practices?

Probe if not discussed: How did the SEA choose these partners?

19. What kind of guidance or support has the state provided to districts over the course of this project?

If not discussed, probe for guidance/support given by his/her SEA office and other SEA offices.

20. What kind of guidance or support has the state provided to schools over the course of this project?

If not discussed, probe for guidance/support given by his/her SEA office and by other SEA offices.

21. What kind of guidance or support have districts provided to schools over the course of this project?

If state has worked with external partners, ask Q22 and Q23, otherwise skip to Q24.

22. What kind of guidance or support have external partners provided to districts over the course of the project?
23. What kind of guidance or support have external partners provided to schools over the course of the project?
24. What efforts has the state used to establish and maintain partner roles and relationships (state staff, partners, etc.)

Probes

- How well do you think these implementation efforts have worked? *Discuss each effort separately. Ask which ones worked very, moderately, or not so well.*
- In your view, what factors have led these efforts [*list which ones*] to work very well? *Repeat for efforts listed under moderately and not so well.*

VI. Future directions

Now we have questions about the future of the project and formative assessment efforts in your state.

25. What are the state's plans for formative assessment practices in the next year? The next 3–5 years?

Probe, if not discussed: How does the state plan to expand the use of formative assessment over time?

- 26. What would you like to see happen with formative assessment in your state in the next year? The next 3–5 years?
- 27. Knowing what you know now, what advice would you give other SEAs that want to promote formative assessment practices (as defined by the CCSSO) at a large scale [building teacher capacity statewide]?
- 28. What do you think are the best roles that states can play to support the use of formative assessment (as defined by the CCSSO) in classroom instruction?
- 29. What more can you add to help us better understand the _____ project in your state?

For state project director only:

We would like your help in identifying people at the local education agency (local education agency) level to interview.

- 30. Have you worked more closely with districts or schools to implement the _____ project? *Give them the option of saying “both” as well.*

→ *If response is districts or both:*

- Please consider three districts whose participating schools you believe demonstrate the strongest and most widespread implementation of the _____ project. Which districts would you say have most fully implemented the project, in rank order?
- In each of these districts, who, in rank order, would you say are the people most involved in and knowledgeable about the project implementation? *Probe for multiple names.* Can you give us contact information?

- For each of these three districts, please name one or two participating schools whose teachers you believe demonstrate the strongest and most widespread implementation. Or, do you think it would be better to ask district project leadership to recommend a school?

If they provide school names:

- Can you give us the names of people at those schools most involved in and knowledgeable about the project implementation? Or, do you think it would be better to ask district project leadership to recommend school-level leaders?

→ *If response is schools:*

- Please consider three schools whose teachers you believe demonstrate the strongest and most widespread implementation of your project. Which schools would you say have most fully implemented the project, in rank order?
- In each of these schools, who, in rank order, would you say are the people most involved in and knowledgeable about the project implementation? Probe for multiple names. Can you give us contact information?
- For each of the schools you mentioned, can you give us the names of people in the school’s corresponding district who would be most knowledgeable about project implementation in the district? Or, do you think it would be better to ask school project leadership to recommend a district-level leader?

VII. Verification and completion of data collection matrix (research question 1)

Please help us complete or confirm information on your state project listed in this data matrix.

Probe/review each category:

- a. Overarching project goals
- b. Definitions of formative assessment
- c. Envisioned classroom assessment practices
- d. Project structure (including staff roles, partner roles, target content areas, student grade levels, number of schools and districts, project timeline)
- e. Funding sources
- f. Services and supports (including professional development and technical assistance)
- g. Monitoring and/or evaluation procedures.

Thank you very much for your time!

District initiative leaders

Introduction

Thank you for agreeing to speak with us today about your district's efforts to promote formative assessment.

We are [introduce selves], members of the Regional Educational Laboratory Northeast and Islands, funded by IES.

We understand that your district has participated in [state's] _____ Project, and we have spoken with people at the state education agency (SEA) about how they have worked to promote formative assessment practices within the state. Our goals for this interview are to learn:

- a. How your district has worked with the state and other groups to implement the _____ project and to promote formative assessment practices, and
- a. How effective you think state and local efforts have been to implement the project.

Do you have any questions before we begin?

I. Individual background and district background in the project:

First, we would like to learn about your involvement in _____ project.

1. What is your role in the district?
2. What has your role been in [supporting formative assessment efforts/the _____ project]?
3. Now, we would like to learn a little about the district's motivation for getting involved in the _____ project. How did your district, and specific schools within your district, come to participate in the project?

Probes:

- How many schools within the district are participating in the project, and how were they selected?
- What content areas and grades levels does the _____ project target?
- Is teacher participation in the _____ project voluntary or required?
 - If voluntary, about what percentage of eligible teachers are participating in each school site?
- How has the project been funded?
- *If not already answered:* What benefits did your district hope to achieve by participating in the project?

4. What has been the working definition of “formative assessment” within this project?

Follow up:

- Using this definition, what does successful formative assessment look like? In other words, what do you expect to see from teachers? Students? Parents?
- Outside the scope of this project, does your district have additional expectations for what successful formative assessment looks like?

If yes, follow up:

- Please describe these expectations.
- What has your district done to help schools and teachers achieve those additional expectations?

II. Methods of project implementation

Now we'd like to ask how the _____ project has been implemented in your district.

5. What are the primary supports that the district has provided to help schools and teachers carry out the work of the project?
6. How enthusiastic would you say school and teacher buy-in have been for the goals and practices promoted by this project?
- Follow up if not addressed: What evidence illustrates this level of buy-in?*
7. How has the district monitored progress at the school or classroom level for the project? (*Probe for measures besides student achievement*)
8. How have teachers been held accountable for fully implementing the formative assessment practices promoted by the project? *Probe: In*

what ways do teacher practices related to the project factor into teacher evaluation?

9. What have been the primary challenges for your district in implementing this project?
10. How has the district addressed those challenges?

Follow up, if not addressed: In your district, how have you worked to address potential school or teacher resistance to changes in school or classroom practice promoted by this project?

Considering those inside and outside your district, who has provided the most support for implementing [formative assessment/the project] in your district? e.g.,

- The state
- External partner(s)
- District leadership
- School leadership.

If interviewee provides a list, choose the one they list or rank first, then ask:

- a. What types of support have they provided?
- b. In what ways have they been most helpful?

Possible examples for b and c: increasing capacity to provide teacher support; helping to negotiate competing demands.

- c. What could they have done differently, if anything, to help better implement this project in your district?

Probe series of questions a–c above for each person/agency/group also mentioned by interviewee.

If not already discussed, ask series for each of the following:

- State/SEA Probe for other SEA supports that might have built district capacity to participate fully in this project
- External partner(s)
- District leadership [if not covered in earlier discussion]
- School leadership [if not mentioned in earlier discussion]

11. How well has the work for this project been aligned with other programs or policies active in your district?

Probes:

- Can you give examples of other district programs or policies that support or compete with the work of this project?
- Can you give examples of state guidance or requirements that support or compete with this project?

III. Perceived outcomes of project participation

Now we'd like to ask a few questions about how participation in the project has affected your district.

12. In what ways have teacher practices changed within participating schools in your district?

Probes:

- How has participation in the project changed:
 - Classroom instruction?

- Assessment practices?
- Content and structure of teacher meetings?
- Teacher collaboration?

- What evidence demonstrates these changes have occurred?
- How have these changes affected students?

13. You have just described specific changes in teacher and school practice. Do these examples apply to most, some, or few participating teachers?

14. So far, what have been the primary benefits to your district by [participating in this project/promoting formative assessment practices]?

Follow up if not addressed:

- What have been the primary benefits to schools in your district?

If benefits are covered in earlier response, ask which are primary.

IV. Future directions

15. What form do you think [efforts to support formative assessment/the project] will take in the next year in your district? The next 3–5 years?

Probe if not addressed:

- How do you anticipate the project or related work will be funded?

16. Knowing what you know now, what would you try to do differently to support formative assessment practices at schools in your district?

17. The motivation for this study was a question posed by state education agency officials about

the best role the state can play to support the classroom use of formative assessment, where teachers engage in a process of frequent assessment to adjust ongoing instruction to meet individual student learning needs.

- How do you think the state can best support classroom-embedded formative assessment practices?
- How about the district? What is its best role in supporting classroom-embedded formative assessment practices?

V. School recommendations

18. *If school not yet selected:* Please consider three schools you believe have made good progress toward full implementation of the project. Which three would you say have most fully implemented the project, in rank order?
19. *If school not yet selected:* In each of these schools, who, in rank order, would you say are the people most involved in and knowledgeable about implementation of the project? *Probe for multiple names and contact information.*
20. Can you tell us a little bit more about the school that we will be visiting?
- Their history with this project.
 - Continuity of leadership and teaching staff? (Lots of turnover?)
 - Why this school?
 - How does their implementation of the project compare to that of other participating schools in your district?

Thank you very much for your time!

School initiative leaders

Introduction

Thank you for agreeing to speak with us today about your school's efforts to promote formative assessment.

We are [introduce selves], members of the Regional Educational Laboratory Northeast and Islands, funded by IES.

We understand that your school has participated in [state's] _____ project, and we have spoken with people at the state department of education about how they have worked to promote formative assessment practices within the state.

Our goals for this interview are to learn

- a. How your school has implemented the _____ project and promoted formative assessment practices, and
- b. How participation in the project has changed teacher practice at your school.

Do you have any questions before we begin?

I. Background

First, we have a couple of background questions about you.

1. What is your role in the school?
2. How did you get involved with [the project/ formative assessment efforts] at your school?

II. Results of participation in project

Now we have questions about how participation in the project has affected your school.

3. In your school, what does formative assessment look like for participating teachers? What practices related to formative

assessment could an observer expect to see on a regular school day? In a regular week?

Probes:

- What kinds of assessments are the focus of this project?
 - How are these assessments analyzed? By whom?
 - How are results of analysis used?
4. How, if at all, has this project [or efforts to promote formative assessment] changed
- a. Assessment practices at your school?
 - b. Instructional practices at your school?
 - c. How regularly scheduled meeting times are used in your school?
 - d. Informal conversation or informal collaboration about assessment and learning among teachers? Among teachers and students?
 - e. Students' experiences in the classroom?
 - f. The school improvement plan?
5. We are curious about the degree of participation from eligible teachers in the formative assessment practices you described earlier.
- For eligible teachers, is participation in the _____ project voluntary or required? If voluntary, about what percentage of eligible teachers are participating at your school?
 - How enthusiastic would you say teacher and administrator buy-in has been at your school for the goals and practices promoted by this project?

- You have already described specific changes in teacher and school practice. Do these examples apply to most, some, or few participating teachers in your school?

6. What aspects of carrying out the project would you identify as most successful? Why?
7. What aspects of carrying out the project would you identify as least successful? Why?

III. School structures, supports, resources devoted to this project

We now have some questions about how your school has structured and supported the work of this project.

8. How have teachers been supported to carry out the work of the project? We are interested both in school-embedded and outside-school-day supports.

Probe for structures and supports, such as

- Meetings/formal collaboration;
 - Online resources;
 - Common planning time;
 - Training/coaching,
 - Collaboration with other schools.
9. What professional development has been provided to teachers and school leaders to support this work? Please describe its content.
 10. What main challenges has your school encountered as you have worked to change classroom assessment and instructional practices through the project?
 - Please give examples of how the school has addressed those challenges.

11. What methods has your school employed to encourage participation in the project by all the teachers in the school?

Follow up:

- How has your school encouraged teachers to integrate practices from this project in daily work?
- How has your school worked to overcome potential teacher resistance to changes in classroom practice promoted by this project?
- How has your school worked to support teachers who have struggled or had difficulty with changes in classroom practice promoted by this project?

12. We are interested in how “regular ways of doing business” at this school have supported or complicated the work of this project. For example, how have the following factors affected the work of this project:

- Structures, like school schedules and common planning time
- Norms and staff practices, like how department/team/grade level/faculty meeting time is used
- Leadership by formal administrators or informal teacher leaders
- Culture of the school (nature of conversations and relationships among staff, between students and teachers).

IV. Contributions from outside the school for this project

Come prepared to probe with list of supports discussed in previous interviews.

13. Have you received direct support from the district for this project?

If yes:

- In what ways has the district been most helpful?
- What could the district have done differently, to better support your school’s work in this project?

14. Have any external partners supported your school’s work in this project?

If yes:

- In what ways have these partners been most helpful?
- What could the external partners have done differently, to better support your school’s work in this project?

15. Have you received direct support from the state for this project?

If yes:

- In what ways has the state been most helpful?
- What could the state have done differently, to better support your school’s work in this project?

16. What external supports have been most helpful for carrying out the work of the project, and why?

17. Has your school modified recommended approaches for this project to better fit the context of your school? If yes, how?

18. How much do other district programs or policies complement or compete with the work of this project? Please describe.

Follow up:

- How much do other state guidance or requirements complement or compete with the work of this project? Please describe.

V. Future directions

19. What form do you think [efforts to support formative assessment/the project] will take in the next year in your school? The next 3–5 years?
20. In what ways do you and your school leadership plan to continue to support this project at your school? How about formative assessment practices?

21. The motivation for this study was a request by state education agency officials about the role of the state in supporting the classroom use of assessment feedback, in which teachers adjust ongoing instruction to improve student achievement of targeted skills and understandings.

How would you answer their question: how do you think the state can best support classroom-embedded formative assessment practices?

Ask if time allows: How do you think the district can best support classroom-embedded formative assessment practices?

22. What more can you add to help us better understand your school's work related to the project?

Thank you very much for your time!

APPENDIX F INTERVIEW DATA CODES

Interviews were digitally recorded, transcribed, and electronically coded using the qualitative data

analysis software package ATLAS.ti. Table F1 lists the interview data codes by major code categories.

TABLE F1

Interview data codes for analysis of formative assessment initiatives in New York and Vermont, 2010

Code	Definition
Background	Includes project history, scope, goals, who is involved, and how got involved
Definition formative assessment	The major conceptual formative assessment code. Definition of formative assessment used within initiative; includes history/source, descriptions, and described outcomes of different understandings (including attempts to reach shared understanding).
Description formative assessment	Description of “what formative assessment looks like” in an ordinary day, week. Also includes roles for teachers/students/parents (even if vague).
Evidence of success	Type of evidence initiative uses to measure success.
External, history	How state education agency chose external partners/how external partners joined the project; also, which external partners supported the project. (“External” includes private vendors, universities, federal comprehensive center).
Goals, project	Stated goals for project.
State education agency department—primary, history	How primary state education agency department became involved with the formative assessment initiative, including relevant background.
State education agency department—other, history	How other state education agency departments became involved with the formative assessment initiative, and what their role was in the project, including relevant background.
Target content	Which content areas formative assessment project targeted.
Target district	How districts came to participate in project.
Target grades	Which grade levels formative assessment project targeted.
Target school	How schools came to participate in project.
Context	Prior or current conditions that describe the setting of the initiative
<i>Implementation</i>	
Challenges/constraints	Challenges faced to implement project, past or current/ongoing. [How challenges are dealt with is a separate code, under <i>Method</i> .] Also includes constraints (lack of capacity described by participants, such as lean staff, past reductions). [Does not include unengaged teachers, which is a separate code under <i>Engagement</i> .]
Competition, district	Other district initiatives, policies, or requirements that compete with or hinder project.
Competition, state	Other state initiatives, policies, or requirements that compete with or hinder project.
Complement, district	Other district initiatives, policies, or requirements that complement or support project.
Complement, state	Other state initiatives, policies, or requirements that complement or support project.
School	School characteristics, such as: <ul style="list-style-type: none"> • Student demographics, • Staff/leadership characteristics • Staff type and organization (for example, in-house coaches; vice principals) • School norms and common staff/student practices • Nature of staff relations • School climate • School structures (for example, schedules, common planning).

(CONTINUED)

TABLE F1 (CONTINUED)

Interview data codes for analysis of formative assessment initiatives in New York and Vermont, 2010

Code	Definition
<i>Context (continued)</i>	
District	District characteristics, such as: <ul style="list-style-type: none"> • Student demographics • District staff/leadership characteristics • Staff type and organization (for example, four staff members) [Characteristics are of the district under study. Characteristics of districts in general are under separate code <i>Role, District.</i>]
<i>General</i>	
State	Includes state-level organization (offices and departments), procedures, interactions with legislature and regents, etc. [Constraints/challenges are under separate code <i>Context.</i>]
Turnover	Staff turnover at any level (state, district, school) that participant identifies as affecting project participation or implementation.
Engagement	Special code. Separate category because can be used to indicate both the context of the initiative (for example, people's receptivity to change) and an outcome (for example, how people react to the initiative). <ul style="list-style-type: none"> • Used to highlight descriptions of people (at state, district, school, or student levels) showing engagement or enthusiasm for the initiative and its practices. Includes demonstration of buy-in. • Also used to highlight descriptions of lack of engagement or enthusiasm for the initiative. • Can include discussion of reasons why described levels of engagement have arisen. [Does not include leadership commitment (engagement as method of implementation), which is under <i>Method, promote targeted practices.</i>]
Future	Future directions for work related to this project. Use for current practices related to the initiative that people plan to or will carry forward as they look ahead.
Funding	Future funding for coordinated formative assessment work.
Plans, goals, methods, hopes	Future plans (including goals, methods, participants, and coordination) for formative assessment-related work in next year and next 3–5 years. Includes hopes for future work. Includes new incorporation.
Method	Methods of implementation of formative assessment initiative. Intentional strategies and actions used to carry out the goals and work of the initiative.
Promote targeted practices	Strategies or actions (formal or informal) that individuals or groups have used to promote project's target practices. Includes policies making participation mandatory or voluntary, types of incentives offered, and how expectations are set and shown. <ul style="list-style-type: none"> • Leadership strategies (actions/messages of persistence, commitment to initiative that affect implementation). • Laundry list of items, broad strategy. [Where relevant, ok to double-code with <i>Context, New, structures, or Professional development. Promote targeted practices</i> is the overall code; <i>New</i> and <i>Professional development</i> codes are subcategories.]
Challenges, response	How dealt/dealing with challenges to implement project [description of challenges is separate code, under <i>Context.</i>]
Evaluation and data collection	Methods of evaluating the progress and success of the initiative or of recording or documenting project activities for evaluation or other purposes (for example, professional development). Can be formal or informal.

(CONTINUED)

TABLE F1 (CONTINUED)

Interview data codes for analysis of formative assessment initiatives in New York and Vermont, 2010

Code	Definition
Funding	State's sources and methods for attaining initiative funding.
Local modifications	How recommended approaches were modified to fit local context.
New, structures	New events/structures created to carry out this project (for example, new formal meetings, schedules, roles). New structures have become systemic, institutionalized, or regular parts of how the organization functions. Includes content and audiences targeted.
Professional development, form	Description of professional development provided to teachers and school leaders for the initiative. Includes description of structure/format (for example, workshops, professional learning communities, coaching) and audiences served.
Professional development, content	Description of content or the substantive material covered in the professional development delivered for the initiative. Includes discussing best practices, sharing lesson plans, examining student work, analyzing data, and so on.
Technical assistance	Description of technical assistance provided for the project, specifically advice or consulting. Includes discussion of structure, content, and audiences targeted.
Outcome	Student, teacher, and school outcomes possibly due to project (includes district and state).
School/district improvement plan	How school/district improvement plan has changed possibly due to project.
Student achievement	How student achievement has changed possibly due to project.
Teaching and learning practices	How specific teacher classroom practices (including instruction, assessment) or student practices (for example, learning habits, teacher/peer interactions) changed possibly due to project. [For changed motivation/engagement in teaching or learning, use <i>Engagement</i> code.].
Increased knowledge, professional development	Increased general knowledge of formative assessment due to project; increased ability to conduct or train people to conduct formative assessment. Applies to any level (including state).
Staff interactions	Changes in how staff (teachers or administrators) talk and work with each other, formally and informally, possibly due to project. [For new collaborative structures, such as professional learning community meetings, created to do the work of the project, use <i>Method, new, structures</i> .]
Other or vague	Use for outcomes that might have been due to project, not including student and teacher outcomes above. Includes vague statements. [For new structures created for project, use <i>Method–new, structures</i> ; for what should be an outcome, use <i>Role</i> codes.]

NOTES

1. Data on principal participation in these sessions are not available.
2. Data on state leaders' participation in these sessions are not available.
3. Although the pilot was officially a one-year initiative, participating schools and teachers were required to make a two-year commitment.
4. Critical friends groups are professional learning communities of 8–12 educators who meet at least once a month with a focus on improving practice and student learning (www.nsrffharmony.org/faq.html). Vermont schools under restructuring are given the option of creating critical friends groups if they choose not to participate in the VT–FAP initiative.
5. An example of a coding difficulty involved the concept of teacher engagement in formative assessment, which was described multiple ways in the interview transcripts. Interviewees variously described teacher engagement as a goal, implementation method, or outcome (current goal of the initiative, method of attracting other teachers, outcome of participation, and future goal). Coders did not always agree on which of these categories to assign references to teacher engagement. To resolve this issue, coders made “engagement” a separate coding category.

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