

An Integrated Stage-Based Framework for Implementation of Early Childhood Programs and Systems



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Submitted by: Allison Metz, National Implementation Research Network, UNC-Chapel Hill
Sandra F. Naoom, National Implementation Research Network, UNC-Chapel Hill
Tamara Halle, Child Trends
Leah Bartley, University of Maryland School of Social Work

Submitted to: Ivelisse Martinez-Beck, PhD., Project Officer
Office of Planning, Research and Evaluation
Administration for Children and Families
U.S. Department of Health and Human Services

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Project Director: Tamara Halle
Child Trends
7315 Wisconsin Avenue
Suite 1200 West
Bethesda, MD 20814

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Allison Metz, Ph.D., is co-director of the National Implementation Research Network. Sandra F. Naoom, MSPH, is associate director at the National Implementation Research Network. Tamara Halle, Ph.D., is co-director of early childhood research at Child Trends. Leah Bartley, MSW, is program manager at the University of Maryland School of Social Work.



Overview for OPRE Research Brief Series on Applying Implementation Science to Early Care and Education Research and Evaluation

Implementation science is the study of the process of implementing programs and practices that have some evidence from the research field to suggest they are worth replicating. It is the study of how a practice that is evidence-based or evidence-informed gets translated to different, more diverse contexts in the real world. In this way, effective implementation bridges the gap between science and practice.

There is a growing body of research looking at the processes and core components of implementing evidence-based practices in different settings and, especially, at what it takes to move an evidence-based practice from the laboratory to the field (Berkel, Mauricio, Schoenfelder, & Sandler, 2010; Durlak & Dupre, 2008; Fixsen, Naoom, Blase, Friedman, & Wallace, 2005; Meyers, Durlak & Wandersman, 2012). However, historically, much of this research has focused primarily on adult services (Simpson, 2002) rather than on services for young children and evidence-based practices that support young children's growth and development.

The importance of implementation has come to the fore within the early childhood field in recent years because, increasingly, early childhood program developers are being asked both to prove their program's efficacy before bringing it "to scale," and to articulate which components of their model, or contexts in which the model is deployed, are essential for making the intervention a success. This is true of individual programs, such as discrete language and literacy interventions, as well as for larger, systems-level interventions, such as statewide initiatives to improve early childhood educators' professional development, children's school readiness, or child care quality. However, until now, the early childhood field has lacked a common framework and language with which to examine important implementation supports for successful initiatives.

This research brief series seeks to provide early childhood researchers, program developers, and funders with an introduction to implementation frameworks and promising practices in implementation science, with the aim of facilitating their use in early care and education research and program evaluation.

- A brief by Allison Metz, Sandra Naoom, Tamara Halle, and Leah Bartley introduces key elements of effective implementation within an integrated, stage-based framework.
- A brief by Jason Downer and Noreen Yazejian defines two cross-cutting themes: the quality and quantity of implementation. A review of recent empirical work provides examples of how these constructs are assessed and examined in relation to early care and education program outcomes. The authors highlight implications for researchers, purveyors, and funders of early childhood programs.
- A brief by Barbara Wasik, Shira Kolnik Mattera, Chrishana Lloyd, and Kimberly Boller uses an implementation science lens to help readers understand the effects that dosage of interventions can have on outcomes, as well as on general implementation factors such as training and program administration.
- A brief by Diane Paulsell, Anne M. Berghout Austin, and Maegan Lokteff introduces the importance of measuring implementation at multiple system levels and proposes tools for doing so. The brief conveys the benefits of measuring implementation at multiple system levels for practitioners, researchers, and policymakers, and offers suggestions and practical considerations.

- A brief by Amy Susman-Stillman, Shannon B. Wanless, and Christina Weiland reviews theoretical frameworks of fidelity from the fields of prevention science, clinical psychology, and elementary education; highlights useful aspects of each framework; and offers early care and education researchers considerations for choosing a framework to use in their studies.

Using implementation science, we can create a shared understanding of what it takes to have effective, replicable, and sustainable early childhood programs and systems in community-based settings. This research brief series aims to provide a useful overview of the current state of the field of implementation science research and its applications to the early care and education field. We hope that researchers, program developers, funders, and other stakeholders will find this series helpful in facilitating the use of implementation science frameworks, methodologies, and analysis in early care and education research and program evaluation.

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An Integrated Stage-Based Framework for Implementation of Early Childhood Programs and Systems

Overview/Executive Summary

There is growing interest in studying the implementation of early childhood programs and systems. Yet, when searching for a framework by which to examine implementation, many different models compete for our attention. Furthermore, previous descriptions of implementation frameworks have yielded common factors related to successful implementation but have not identified the common elements present across each stage of implementation.

In this brief, we provide an integrated stage-based framework that builds on previous syntheses in implementation science literature. This framework posits that 1) implementation happens in four discernible stages, and 2) three common threads, or core elements, exist across each of these stages. The three core elements include: building and using implementation teams to actively lead implementation efforts; using data and feedback loops to drive decision-making and promote continuous improvement; and developing a sustainable implementation infrastructure that supports general capacity and innovation-specific capacity for individuals, organizations, and communities. The conceptualization of an integrated, stage-based framework for implementation can assist program developers, early childhood researchers, and policymakers in their work with early childhood programs and systems.

In this brief, we first define the three common elements, showing their basis in previous syntheses of the implementation science literature, and then describe the different roles and functions of these core elements at each stage of implementation. We provide illustrative examples of how this integrative, stage-based framework can be used by early childhood program developers, researchers, and policymakers. In

addition, we share a planning tool (in the appendix) that captures key activities and questions that arise at each stage for each of the three core implementation elements. The planning tool can be used for a range of key stakeholders in early childhood programs and systems.

Introduction

There is growing recognition in the early childhood field that in order to reap the benefits of investments in early childhood initiatives, we need to understand and support effective implementation practices at the earliest planning stages of implementation, once the initiative is first rolled out, and also once the initiative is fully established and scaled up. There are many implementation frameworks that have been proposed in the implementation science literature that could be useful for identifying effective implementation practices in early childhood programs and systems (e.g., Fixsen, Naoom, Blase, Friedman, & Wallace, 2005; Wandersman, Duffy, Flaspohler, Noonan, Lubell, Stillman, Blachman, Dunville, & Saul, 2008; Meyers, Durlak, & Wandersman, 2012). However, existing implementation frameworks tend to involve many components, and are not necessarily organized around common elements that need to be attended to at each stage of implementation.

In an effort to support early childhood practitioners', researchers', and policymakers' understanding and use of effective implementation practices at each stage of implementation, we suggest an integrated, stage-based framework for implementation. This conceptualization rests on two premises: 1) implementation happens in four discernible stages; and 2) three common threads, or core implementation elements, exist across each of these stages. These premises are well-grounded in the extant implementation science literature.

The implementation science literature confirms that implementation occurs in discernible stages or phases (e.g. Meyers, Durlak, & Wandersman, 2012; Aarons, Hurlburt, & Horowitz, 2011; Elwyn et al., 2007; Kilbourne, Neumann, Pincus, Bauer, & Stall, 2007; Fixsen, Naoom, Blase, Friedman, & Wallace, 2005; Hawkins & Catalano, 2004). For example, Fixsen and colleagues (Fixsen et al., 2005) proposed that implementation occurs across six stages: exploration, installation, initial implementation, full implementation, innovation, and sustainability (later collapsed into four stages: exploration, installation, initial implementation, and full implementation). Aarons and colleagues' (Aarons et al., 2011) conceptual model of implementation in public service sectors proposed four different implementation phases, including exploration, adoption/preparation, implementation, and sustainment. In the Quality Implementations Framework (QIF), a synthesis of 25 implementation frameworks, Meyers, Durlak, and Wandersman (2012) also developed a four-phase model of implementation: initial considerations regarding the host setting; creating a structure for implementation; ongoing structure once implementation begins; and improving future applications. Despite the different terminology used to describe the phases or stages of implementation, there is general consensus that there are distinct periods within the implementation process, and they range from planning for implementation to fully implementing and sustaining a practice, program, or system.

While there is general recognition that implementation happens in several phases, there is also the understanding that implementation may not always move linearly through such phases (Aarons et al., 2011; Bertram, Blase, Shern, Shea, & Fixsen, 2011; Fixsen et al., 2005; Mendel, Meredith, Schoenbaum, Sherbourne, & Wells, 2008). It is clear that implementation is not an event, but a process, involving multiple decisions, actions, and corrections to change the structures and conditions through which organizations and systems support and promote new program models, innovations, and initiatives. Implementing a well-constructed, well-defined, well-researched program to the point of successful functioning and sustainability can be expected to take two to four years (Bierman et al., 2002; Fixsen, Blase, Timbers, & Wolf, 2001; Panzano & Roth, 2006; Prochaska & DiClemente, 1982; Solberg, Hroschikoski, Sperl-Hillen, O'Conner, & Crabtree, 2004).

In addition to common stages or phases of implementation, there are common features of factors related to the successful implementation across implementation frameworks. Previous syntheses of implementation frameworks have yielded common factors for successful implementation (e.g. Damschroder, Aron, Keith, Kirsh, Alexander, & Lowery, 2009; Durlak & DuPre, 2008; Meyers, Durlak, & Wandersman, 2012; Proctor, Landsverk, Aarons, Chambers, Glisson, & Mittman, 2009). This brief builds upon the previous work on synthesis across implementation frameworks by identifying three core elements of effective implementation that are present at each stage of implementation: implementation teams, data and feedback loops, and implementation infrastructure. By embedding these three core elements of implementation within each implementation stage, we introduce an integrated, stage-based framework.

In the first section of this brief, we describe the three core elements we believe are addressed across stages of implementation and show their basis in previous syntheses of the implementation science literature. We then explore how each of these three core elements is embedded within the distinct stages of implementation, describing the different roles and functions of these core elements at each stage. In addition, we share a planning tool for early childhood stakeholders (in the appendix) that captures key activities and questions that arise at each stage for each of the three core implementation elements. We conclude the brief by providing a concrete example of how the integrated, stage-based framework, and the planning tool, can be used by stakeholders in the early care and education field.

Core Elements of Stage-Based Implementation

As noted above, many previous syntheses of literature in the implementation science field have identified factors related to effective implementation. The innovation that our integrated, stage-based conceptualization brings is identifying a small set of three core implementation elements that are threaded through and important in each stage of implementation. The three core elements are:

1. building and using implementation teams to actively lead implementation efforts;
2. using data and feedback loops to drive decision-making and promote continuous improvement; and
3. developing a sustainable implementation infrastructure that includes general capacity and innovation-specific capacity.

Implementation teams

Implementation teams are groups of individuals who have the task of intentionally monitoring and supporting implementation. Implementation teams see themselves as accountable for the success of the new initiative. Teams may include key personnel (such as program administrators and practitioners) and key stakeholders (such as program developers, funders, recipients of program services, or community members). Ideally,

This brief builds upon the previous work of synthesis across implementation frameworks by identifying three core elements of effective implementation that are also present at each stage of implementation: building the capacity of implementation teams to actively lead implementation efforts; using data and feedback loops to drive decision-making and promote continuous improvement; and developing a sustainable implementation infrastructure that includes general capacity and innovation-specific capacity. By embedding these three core elements of implementation within each implementation stage, we introduce an integrated stage-based framework.

teams should be established at every level of a program or system, or to target different aspects of an initiative. For example, for a complex initiative such as a state-wide implementation of a new early childhood assessment, separate implementation teams may be established at the state, regional, district, and school levels to monitor and support the initiative.

Furthermore, there may be separate implementation teams, perhaps made up of individuals from across the levels of the system, monitoring distinct aspects of the initiative, such as the training of early childhood educators on the administration of the new early childhood assessment. The “core” implementation team is responsible for the day-to-day implementation of the initiative and can be composed of between three and twelve members. Members of implementation teams should represent different perspectives, including practice, supervision, administrative leadership, and policy perspectives. These different perspectives can be present within a single implementation team or be represented through a linked teaming structure across levels of a program or system.

Multiple implementation frameworks have identified implementation teams as critical to the effectiveness of an initiative. For example, Meyers et al. (2012) report that implementation teams appeared with 68 percent frequency across the 25 published implementation frameworks reviewed and synthesized for the Quality Implementation Framework (QIF). The QIF model itself proposes implementation teams as a major structural feature for implementation. Similarly, the Active Implementation Frameworks (AIF) (Fixsen, et. al., 2005; Metz & Bartley, 2012; Metz, Bartley, Ball, Wilson, & Naom, in press) posit that a key feature for active implementation involves building implementation teams that collectively have the knowledge, skills, and abilities to shepherd an innovation through the phase of implementation.

Implementation teams should have adequate knowledge and skill in a number of areas in order to support those who are actually doing the implementing. Each team should contain one or more members who are knowledgeable about the intervention, who understand the implementation infrastructure necessary to support the intervention, and who are committed to using data and feedback loops for continuous improvement. Specifically, the core competencies of implementation teams include:

- Knowledge and application of the innovation or approach – Teams should have fluency in the core components of the innovation, and the ability to make informed decisions regarding program adaptation and development and to support fidelity to core components in practice.
- Knowledge and application of the implementation infrastructure – Teams should have knowledge of general and innovation-specific capacities needed to support and sustain the innovation and the use of best practices to ensure these capacities are put in place. Teams should have an understanding of the steps that will lead to successful implementation and use a stage-based approach to selecting, supporting, improving, and sustaining the innovation.
- Knowledge and application of improvement cycles – Teams should use strategies to efficiently solve problems and get better. Teams should institutionalize feedback loops, use data for decision-making and problem-solving, and functionally engage leaders in initiating and improving practice.
- Knowledge and application of systems change – Teams should demonstrate knowledge of system components¹ and use skills for system building and cross-sector collaboration to make connections and improve access, reach, or scale of innovations.

There is evidence that using implementation teams to actively and intentionally make changes produces higher rates of success more quickly than traditional methods of implementation that do not take such an active approach. For example, Fixsen, Blase, Timbers, and Wolf (2001) reported 80 percent success in about

¹Systems components as developed by Coffman (2007) include: Context (i.e., efforts to produce political will and policy and funding changes); Components (i.e., efforts to improve programs and services within the system); Connections (i.e., efforts to build linkages across system components); Infrastructure (i.e., efforts to develop system supports); and Scale (i.e., efforts to build a broad and inclusive system).

three years with implementation teams using the active methods for implementation. In a randomized control trial study testing the community development team (CDT) model²—one model of implementation that uses implementation teams—across 60 sites in California and Ohio (randomized to CDT or implementation as usual), it was found that “CDT appeared to increase the number of [foster care] placements, the quality of implementation once implementation began, and resulted in more robust ... programs as indicated by having significantly more youth placed in care during the study period among counties that began placements, and by having completed more implementation activities” (Brown et al., 2014, p. 11).

Data driven decision-making and feedback loops

Data are used to drive decision-making, as well as to support effective communication and feedback loops across multiple levels of the system. Hence, this brief includes data-driven decision-making and feedback loops in the same common thread. Implementation frameworks emphasize the need for continuous quality improvement through the systematic assessment and feedback of information and data related to planning, implementation, and outcomes (Chinman, Imm, & Wandersman, 2004). For example, the Getting to Outcomes Accountability framework emphasizes the importance of including continuous quality improvement strategies even during the planning stages for successful implementation (Chinman, et al., 2004). Also, in the Consolidated Framework for Implementation Research (CFIR; Damschroder et al., 2009), reflecting and evaluating is described as one of four essential activities within the implementation process (the implementation process itself being the fifth major domain of the CFIR model). Reflecting and evaluating refers to “quantitative and qualitative feedback about the progress and quality of implementation accompanied with regular personal and team debriefing about progress and experience” (Damschroder et al., 2009, pg. 11). Damschroder and her colleagues reviewed 19 implementation frameworks and reached the conclusion that “dedicating time for reflecting or debriefing before, during, and after implementation is one way to promote shared learning and improvements along the way” (Damschroder et al., 2009, pg. 11). As another example, in the Quality Implementation Framework (QIF; Meyers et al., 2012), two support strategies are identified within the third phase of the framework: process evaluation and supportive feedback mechanisms. The QIF, a synthesis of 25 implementation science frameworks, notes that using data to guide decision-making and ongoing improvement is a key feature of other implementation frameworks.

The Active Implementation Framework (AIF; Fixsen et al., 2005; Metz & Bartley, 2012) also highlights the importance of feedback loops and emphasizes that connecting policy to practice is a key aspect of reducing early childhood systems barriers to high-fidelity implementation. Often, early childhood practitioners experience barriers to service delivery that can be solved only at the policy level. There needs to be a system in place that ensures practice experiences are being fed back to the policy level to inform decision-making and continuous improvement.

Policy-practice feedback loops are an example of a continuous improvement cycle, typically signified as the Plan, Do, Study, Act cycle (Deming, 1986; Shewhart, 1931). As noted in Figure 1, the four pieces of a continuous improvement cycle include: (1) Specifying the plan that helps move service and interventions forward, (2) focusing on facilitating the implementation of the plan, (3) developing assessments to understand how the plan is working, and (4) making changes to the next iteration of the plan to improve implementation. These four steps are needed at each level of the organizational system. For example, at the practice level, the Plan, Do, Study, Act cycle needs to occur on an ongoing basis for rapid cycle problem-solving.

Not only do these continuous improvement cycles need to occur within each level of an organization, but in order for a new intervention to be successful, implementation teams across the levels of an organizational structure also need to establish feedback loops between the levels. Between-level feedback loops, such as

² Community development teams are formed at an implementing agency to develop and execute implementation plans and overcome organizational barriers. Details on community development teams are described further in Sosna and Marsenich (2006).

the policy–practice feedback loop, demonstrate the Plan, Do, Study, Act cycle on a larger scale. Obviously, moving through the continuous improvement cycles of a large, multi-level feedback loop will take longer than a single feedback loop at the practice level.

Continuous improvement cycles are necessary because we know that new practices or innovations do not fare well in existing organizational structures and systems. Unfortunately, without effective feedback loops within and across levels of an organizational system, effective innovations are often changed to fit the existing systems, as opposed to existing systems changing to support effective innovations.

In order to use feedback loops effectively, implementation teams need to have valid and reliable data on how the innovation is functioning to guide decision-making along the way. Data need to be collected, analyzed, and reported frequently to monitor progress and to make decisions about the ongoing planning, implementation, and outcomes of an intervention (Chinman, Imm, & Wandersman, 2004).

Stakeholders tend to be most interested in outcome data; they want to know whether their investments are achieving the results they anticipate and desire. Given limited resources, they would prefer to designate their monetary and human capital towards monitoring overall fidelity to the model being implemented and to outcomes. But it is critical that time and resources be dedicated to gathering data on all aspects of the implementation process and at all stages of implementation in order to make the necessary adjustments to meet local, contextual conditions and in order to understand from a systematic and scientific analysis how the quality of implementation affects outcomes. In particular, it is critical that data be gathered and analyzed on an ongoing basis regarding the status of the third core stage-based element: implementation infrastructure.

Implementation infrastructure

The implementation infrastructure includes the building blocks needed to support practice, organizational, and systems change (Metz & Bartley, 2012). The development of a sustainable implementation infrastructure is a key element of all implementation frameworks. Many frameworks and models in the implementation

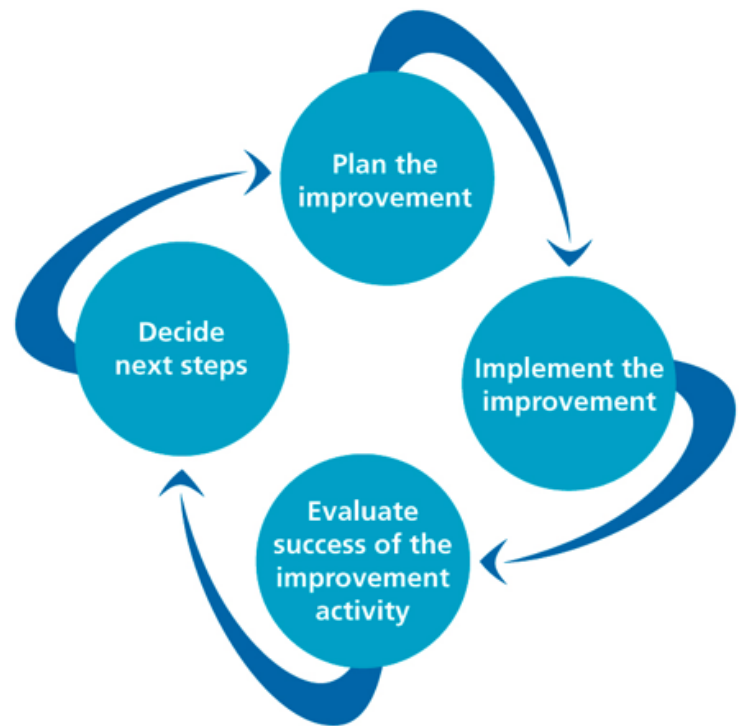


Figure 1. An example of a continuous improvement cycle

Given limited resources, stakeholders would prefer to designate their monetary and human capital towards monitoring overall fidelity to the model and to outcomes. But it is critical that time and resources be dedicated to gathering data on all aspects of the implementation process and at all stages of implementation in order to make the necessary adjustments to meet local, contextual conditions and in order to understand from a systematic and scientific analysis how the quality of implementation affects outcomes.

science literature describe capacity building around aspects of the innovation and the organization (Damschroder et al., 2009; Durlak & Dupre, 2008; Flaspohler, Duffy, Wandersman, Stillman, & Maras, 2008; Fixsen et al., 2005; Fixsen et al., 2009; Greenhalgh, MacFarlane, Bate & Kyriakidou, 2004; Metz & Bartley, 2012; Wandersman et al., 2008). Flaspohler and colleagues discuss the implementation infrastructure in terms of general capacity and innovation-specific capacity. General capacity refers to skills or characteristics (at the individual level) and the overall functioning (at the organizational and community levels) that are associated with the ability to implement or improve any intervention (Flaspohler et al., 2008). For example, when building the general infrastructure capacity to undertake a new early childhood initiative (regardless of the specific details of that initiative), the focus would be on individuals' having adequate early childhood knowledge and background, and a willingness to take on the initiative. At the organizational level, building the general infrastructure capacity for an early childhood initiative would involve supporting organizations in developing a clear and pertinent mission, effective leadership, clear and effective organizational structure, a good working climate, adequate technology, and data-driven decision-making practices. At the community level, building general infrastructure capacity would focus on leadership and opportunities for participation in the initiative, and with bringing additional resources to the initiative, for example, by making connections among people and organizations, making connections to outside institutions, building a sense of community, and knowing the norms and values of the community.

Innovation-specific capacity refers to the necessary knowledge, skills, and motivation which are required for effective use of a specific innovation or evidence-based model (Flaspohler et al., 2008). Taking our earlier example of implementing a new state-wide early childhood assessment, we might view innovation-specific capacity at the individual level as building an individual's knowledge of the purposes and uses of early childhood assessments, and the individual's capabilities to administer, interpret, and communicate the results of the new early childhood assessment reliably as intended. Building an early childhood practitioner's knowledge and skills for this new child assessment will require the investment and support of the individual's supervisor or program administrator in the form of providing the necessary training, ongoing technical assistance, and progress monitoring.

At the organizational level, the innovation-specific capacities may focus on leadership having adequate knowledge about early childhood assessments, the needed buy-in for the new assessment, and the willingness to allocate the necessary time and resources for training, ongoing technical assistance, and monitoring of early childhood educators in the use of the new assessment. In addition, this innovation-specific capacity may involve the organization providing adequate staffing in the early childhood program while early childhood educators are gaining the necessary training for the assessment, providing the necessary space and materials for conducting the assessment, and providing technology for storing and analyzing the child assessment data that are collected within the organization for decision-making purposes (e.g., for planning individualized instruction of children).

At the community level, innovation-specific capacity might involve making sure the need for and purpose of the new early childhood assessment is well understood and accepted by parents and other community stakeholders. It may also involve partnering with other organizations to support the training of early childhood educators to use the assessment; running public awareness campaigns in the community; and setting up data entry, data storage, and/or data analysis systems.

Research confirms that implementation infrastructure, in terms of both the skills and characteristics of individuals and the overall functioning of the organization, is necessary for effective implementation. For example, an implementation study of the Triple P System, a system of parenting programs for parents with children ages zero to eight, found that both individual provider and organizational context factors were important in the successful implementation of evidence-based practices (Shapiro, Prinz, & Sanders, 2012).

The Active Implementation Framework discusses implementation infrastructure capacity, but uses the term “implementation drivers” to denote this infrastructure. Although the AIF does not specifically distinguish between general and innovation-specific infrastructure capacity, like Flaspohler et al.’s (2008) conceptualization, this framework does distinguish between the competencies of individuals involved in the implementation of an innovation, which the AIF calls competency drivers, and the organizational and community supports needed to create an hospitable environment for successful implementation, referred to as organization drivers (Fixsen et. al., 2005; Fixsen et al., 2009; Metz & Bartley, 2012).

Similar to the concept of innovation-specific capacity at the individual level, the AIF’s competency drivers are mechanisms to develop, improve, and sustain practitioners’ and supervisors’ ability to implement a program or innovation to benefit children and families. Competency drivers include selection of early childhood practitioners with the required skills, abilities and other innovation-specific prerequisite characteristics; training of early childhood practitioners and others involved at the agency to provide knowledge related to the theory and underlying values of the program or innovation, opportunities to practice new skills to meet fidelity criteria, and receipt of feedback in a safe and supportive training environment; on-the-job coaching to practice and master the new skills, with the use of multiple sources of data to provide feedback to practitioners to improve practice and organizational fidelity; and evaluation of staff performance via a performance assessment to assess the application and outcomes of skills that are reflected in selection criteria, taught in training, and reinforced in coaching. Ideally, agencies should develop and implement transparent staff performance assessments, use multiple sources of data to assess performance, institute positive recognition so assessments are seen as an opportunity to improve performance, and use performance assessment data to improve individual practice and organizational fidelity.

AIF’s organization drivers are similar to the notion of “general capacity” at the organizational level because they intentionally develop the organizational supports and systems interventions needed to ensure that the individuals carrying out the new program or innovation are effectively supported and that data are used for continuous improvement (Fixsen et al., 2005; Metz & Bartley, 2012). In order to provide this hospitable, organizational environment, data systems need to be set up to support data-driven decision-making, including the collection and use of quality assurance data, fidelity data, and outcome data. In addition, the organization’s administration needs to facilitate the new practice by (1) providing the necessary leadership to address challenges and create solutions, (2) developing clear communication and feedback loops within the organization, (3) adjusting and developing policies and procedures (as necessary) to support the new practice or innovation, and (4) reducing administrative barriers at the institutional level. A final organizational driver in the AIF model refers to connections to external systems (such as other organizations or individuals within the community) to ensure the availability of financial, organizational, and human resources required to support the new practice. Alignment of external systems to support innovations within a specific organization is called systems interventions within AIF and is considered a critical aspect of implementation.

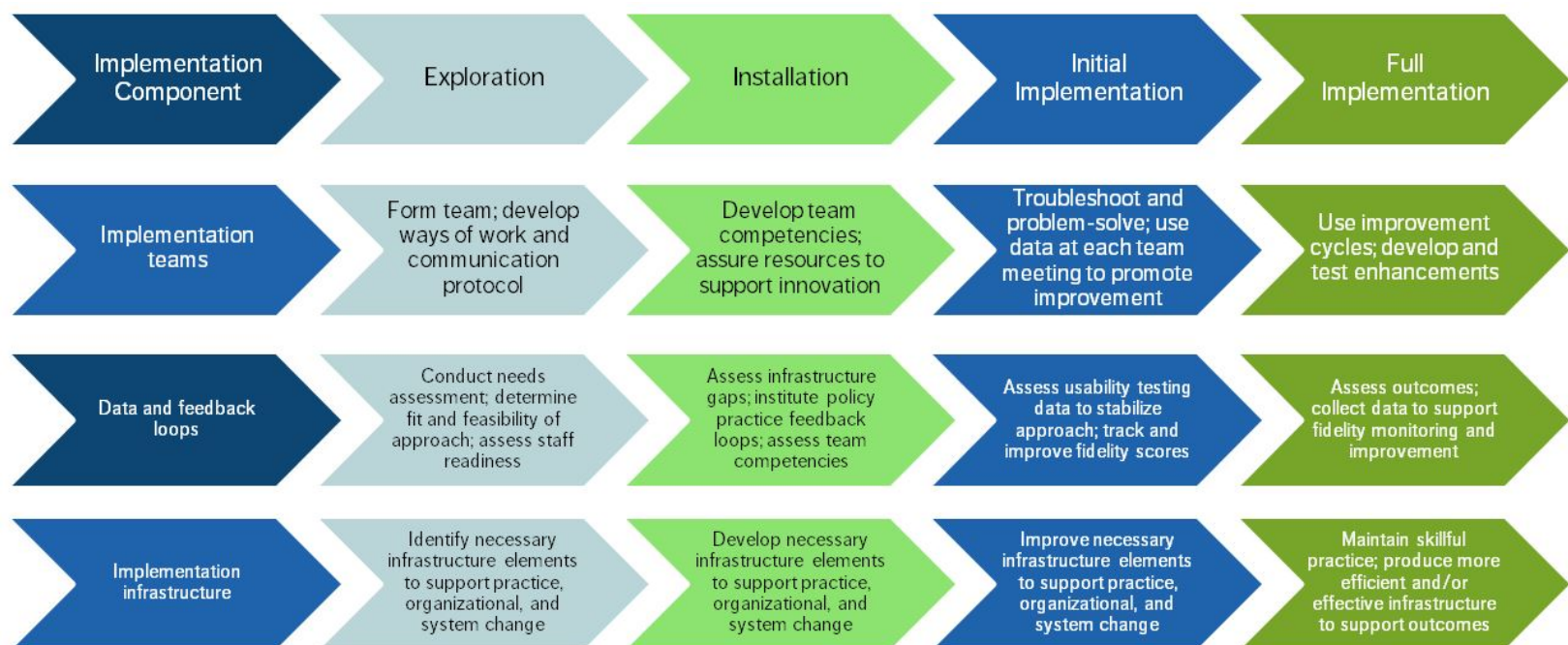
Considering the Flaspohler et al. (2008) and AIF (Fixsen et al., 2005; Metz & Bartley, 2012) conceptualizations of implementation infrastructure, it is clear that there is consensus on the centrality of implementation infrastructure as a critical feature of effective implementation. There is a need for infrastructure to support implementation at the individual, organizational, and community levels. Furthermore, there is a need to support both general capacities of individuals and organizations as well as innovation-specific capacities to ensure effective implementation of any early childhood practice, program, or system.

We turn now to considering all three core elements as they are embedded within the stages of implementation.

Stage-Based Implementation

The three core elements described above (implementation teams, use of data and feedback loops, and infrastructure development) take place at each of the stages of implementation. For the purpose of this brief, we use the four functional stages of implementation outlined by the AIF (Fixsen, et. al., 2005), although our integrated stage-based model could also be applied to other conceptualizations of implementation stages in the literature. In the AIF conceptualization, sustainability is embedded within each of the four stages rather than considered a discrete, final stage. Each stage of implementation does not crisply end as another begins. They often overlap, with activities related to one stage still occurring or reoccurring as activities related to the next stage begin. Each stage, though, has in common the application of the three core elements. The core elements serve different roles and functions at each stage, but they are present at each stage (see Figure 2). Below we provide a brief overview of the stages, highlighting the role of the three core elements at each stage.

Figure 2. Integrated stage-based conceptual framework



Exploration stage

The first stage of implementation in the AIF conceptualization is the exploration stage. It occurs well before a new practice or program is put in place “on the ground,” or, alternatively, is the first stage of re-assessing whether what is currently in place is the best fit for the needs of the target population or community. Activities of this stage include assessing the needs of the community, considering the possibilities for meeting those needs, judging the feasibility of different program models to meet the identified needs, and deciding on a plan of action and the resources needed to enact the plan.

Implementation teams. During the exploration phase, implementation teams are formed and outline their

work and communication protocols. It is best practice to have implementation teams develop a team charter called a Terms of Reference (ToR). The ToR is a detailed document outlining the purpose of the project or group, how the group will be structured, and how the work will be done. It functions in two ways: (1) it is an internal memorandum of understanding for the group or project team; and (2) it links the group or project team to broader systems work (e.g., collaborative work, policy change, regulatory revisions). The following components are often addressed within a ToR: vision; goals and objectives; scope and boundaries; roles and responsibilities; linking communication protocols to accomplish service and policy alignment; decision-making authority; deliverables; and implementation plans.³ The ToR may specify how decisions will be made and how feedback within and between implementation teams will be provided.

Data and feedback loops. Once an implementation team is formed, it works together to achieve the overall goal of the exploration phase, which is to examine the degree to which a particular model, program, or approach meets the community's needs and whether implementation is feasible. In this first stage of implementation, implementation teams must assess the goodness of fit between potential program models and the needs of the children and families they serve. Potential program models must have their core intervention components clearly identified and fully defined. Requirements for implementation must be carefully assessed and potential barriers to implementation examined. Implementation teams use data to drive decision-making about selecting an appropriate intervention model in this stage. Data are collected through needs assessments, intervention assessments, and staff and organizational readiness assessments. The information gathered is used immediately and in an iterative fashion to come to a decision about the best model, program, or approach to adopt to meet the needs of the community.

In addition, the implementation team at this stage develops linked communication protocols to guide ongoing communication within and among implementation teams. Communication is facilitated by frequent meetings of the core implementation team during this early stage of implementation. Weekly meetings of the core team are recommended at this stage, but ancillary teams that are part of the linked team structure may meet less frequently (e.g., monthly) during this stage.

Infrastructure. Planning for the infrastructure to support the new practice or program begins during this first stage of implementation. Infrastructure activities should involve assessment and planning for the general and innovation-specific capacities needed among individuals, organizations, and the community to initiate and sustain the innovation. General capacities provide the foundation needed to support implementation of any new innovation and may include community connections, technology, leadership, and organizational climate. Innovation-specific capacities provide the implementation supports necessary for achieving fidelity to a specific model or approach and may include staff training, performance or fidelity assessments, and administrative policies and procedures that ensure organizational and systems alignment are hospitable to the new model or approach. Involvement of key stakeholders and development of program champions within the organization and at the community level are both critical to planning for strong infrastructure during this stage.

Installation stage

During the installation stage, new services are not yet being delivered, but the necessary individual and organizational competencies and supporting infrastructure are being established so that the new practice can be successfully put in place on the ground in the near future.

Implementation teams. During this stage, implementation teams actively build their capacity to support

³ There are many online resources and templates for creating a Terms of Reference. Here are just a few: <http://implementation.fpg.unc.edu/module-3/topic-5>; <http://www.invo.org.uk/getting-started/template-one/>; http://betterevaluation.org/resources/guides/tor/how_to; http://novascotia.ca/psc/pdf/employeeCentre/recognition/toolkit/step2/Terms_of_Reference_Template.pdf

implementation of innovations selected during the exploration stage. Implementation teams partner with program developers, external consultants, and intermediary organizations to ensure they have the competencies needed to support and sustain implementation at the level of the individual as well as at the level of the organization. At this stage, implementation teams work together to assure the availability of resources necessary to initiate the project, including the development of the implementation infrastructure.

Data and feedback loops. Implementation teams gather data during this phase to ensure that communication is happening as intended both within and between levels of the organization, team members and key stakeholders; that all involved are satisfied with the process; and that general and innovation-specific capacities are sufficient to begin implementation confidently. For example, to ensure that staff who will be carrying out the new practices have the necessary general and innovation-specific competencies, implementation team members may examine data gathered from resumes and interviews during staff recruitment, and look at attendance records and performance assessments from staff training sessions. Or, implementation team members might examine data from evaluations of the training sessions to determine how satisfied staff were with the training on the new practice. Based on the evaluation of these data sources, implementation team members may decide to make adjustments to the innovation model, or to the implementation supports (e.g., training, coaching, leadership strategies) or infrastructure (e.g., data collection processes), with the intention of facilitating the success of the innovation once it becomes available to consumers.

Good practice would suggest that the core implementation team (i.e., those responsible for the daily implementation of the innovation) would continue to meet weekly during this stage of implementation. Ancillary implementation teams, such as leadership teams or community advisory boards, might meet only once a month during this stage. However, to promote communication and feedback across levels, the core implementation team may meet with leadership and management of the organization bi-weekly at this stage.

Infrastructure. Once a decision is made to adopt a program model, many structural and instrumental changes in a number of settings and systems must be made in order to initiate the new practices. Implementation teams develop and install the implementation infrastructure necessary to initiate the project, including selecting or recruiting staff, training staff, securing necessary space and equipment, securing organizational supports such as monetary and human capital, and developing new or strengthening existing operating policies and procedures.

Initial implementation stage

During the initial implementation stage, service delivery of the new program model or practice is first put into place on the ground and made available to consumers. The key activities of the initial implementation stage involve strategies to promote continuous improvement.

Implementation teams. Implementation teams work together within and across levels of the organization to support the implementation infrastructure and ensure high fidelity implementation of the innovation. Implementation teams place a heavy emphasis on the systematic review of data during this stage to ensure that any changes to the model or approach are purposeful and planned, rather than reactionary or opportunistic. Many initiatives fail for lack of study and reflection on what is actually being done and what the results are from having done it. Sugai (2004) describes seven basic questions that can be asked by implementation teams to promote ongoing improvement during initial implementation of an innovation, model, or approach (the “it” described in the seven questions):

1. What does “it” look like now?
2. Are we satisfied with how “it” looks?
3. What would we like “it” to look like?
4. What would we need to do to make “it” look like that?

5. How would we know if we've been successful with "it"?
6. What can we do to keep "it" like that?
7. What can we do to make "it" more efficient & durable?

Data and feedback loops. A hallmark of this stage is using data to assess initial implementation, identify solutions to problems that arise, and drive decision-making. It is critical to address barriers and develop solutions quickly rather than allowing problems to re-emerge and reoccur (Metz and Albers, 2014). The implementation teams use improvement cycles to troubleshoot and problem-solve barriers to implementation and improve the implementation infrastructure. Three types of improvement cycles used during this stage include usability testing, rapid cycle problem-solving, and policy-practice feedback loops.

Usability testing (Nielsen, 1994) refers to testing the innovation initially with only a few examples (e.g., three to five early childhood practitioners initiating new practices or services) to improve and stabilize the early components of the innovation, the implementation supports, and the data collection processes. Usability testing aims to ensure that processes are improved, the infrastructure can support the needed processes to do the innovation well, and research and evaluation can proceed more confidently. Usability testing proceeds until few major problems are detected. However, there will always be challenges in early childhood programs and systems; the goal of usability testing is to solve the more obvious and difficult problems at the early stage of initial implementation.

Rapid-cycle problem-solving is used to detect emergent strengths and gaps and to quickly test solutions to difficulties as they arise. This is different than usability testing, which from the beginning identifies potential challenges and collects data to yield information related specifically to those anticipated barriers. As noted earlier, rapid cycle problem solving is carried out by implementation teams at a single level of the organizational system and typically follows the Plan, Do, Study, Act sequence of problem-solving for continuous program improvement. As one example, implementation teams might identify time-limited task groups to address key challenges during early implementation efforts. In order to solve challenges, task groups quickly identify data sources and collect information, conduct analyses, develop targeted strategies, and reassess progress.

Also as noted earlier, feedback loops can occur across levels of a system, including from the closest (practice) level to the furthest (policy) level of a system. In this stage of implementation, implementation teams use policy-practice feedback loops initiated in an earlier stage to detect practice-level barriers and ensure that these challenges are shared and addressed systemwide (Fixsen, Blase, Metz, and Van Dyke, 2013). These processes can take on many different forms (e.g., surveys, forums, joint practice and leadership meetings), but implementation teams must ensure that a viable process is in place, and that policies and procedures are enacted to facilitate the effective implementation of the new practice.

Infrastructure. The infrastructure is considered fragile during initial implementation. General and innovation-specific capacities that were identified during exploration and installed during installation are monitored for the presence and strength of their contribution to model fidelity. Specifically, when program fidelity is inconsistent or not meeting thresholds for this initial stage of implementation, infrastructure components are assessed and decisions are made regarding whether strengthening or improving an infrastructure component might improve fidelity. The infrastructure helps to determine if poor fidelity is a result of a competency challenge (e.g., the need for more training, ongoing coaching, additional support from the program developer), organizational challenge (e.g., a misalignment between administrative practices and/or a misalignment between policy and practice), and/or leadership challenge (e.g., the need for leadership to attend to organizational or system barriers).

Full implementation stage

Full implementation occurs as the new practice becomes integrated into all levels of the system and the majority of practitioners skillfully provide new services. Full implementation means that more than 50 percent of early childhood practitioners are implementing the innovation with fidelity to the model, and expected outcomes are being achieved.

Implementation teams. During full implementation, implementation teams work together to maintain fidelity to the innovation, sustain the implementation infrastructure put in place during the installation stage and refined in the initial implementation stage, and develop innovative strategies for improving the effectiveness and/or efficiency of implementation to improve outcomes.

Data and feedback loops. At this stage, implementation teams are reviewing data such as fidelity and staff performance assessment data, outcome data, and quality assurance data to make decisions around possible improvements and enhancements to the innovation. Implementation teams consider how the innovation or implementation infrastructure might be enhanced to reduce burden of implementation or increase efficiency of implementation without compromising outcomes, or they may consider how the innovation or implementation infrastructure might be enhanced to improve outcomes even more.

Infrastructure. In this stage, system and organizational changes necessary to support the innovation have been established and are functioning well. Infrastructure considerations during full implementation include how to increase the efficiency of building staff competency while maintaining skillful practice, producing more efficient and/or effective organizational supports, and monitoring systems alignment. Scale-up issues are also identified during this stage. For example, would the current infrastructure components support scaling? Would training need to be redesigned to address increased numbers of practitioners? Would data systems need to be developed to facilitate information sharing across jurisdictions? Would new systems interventions need to be addressed? Implementation teams consider these questions as they make decisions regarding potential program replication or scale-up, and new teams may be formed if scaling up is considered desirable and feasible.

The Stage-based Implementation Framework in Action

Earlier in this brief, we used a hypothetical example of implementing a statewide early childhood assessment system to illustrate the core elements of implementation teams and implementation infrastructure. Now, in order to illustrate the integrated stage-based implementation framework in a holistic way, we use a real-life example of implementing a formative assessment system for kindergarten through third grade in the state of North Carolina.

In November 2014, the state of North Carolina was at the beginning of the installation stage of implementing a new formative assessment system for kindergarten through third grade (K-3) that was being designed and launched as part of the state's Race to the Top Early Learning Challenge Grant (RTT-ELC).⁴ An interview with a project leader illuminated the progress made on the three core elements of implementation up until this point, in the implementation of the K-3 Formative Assessment Process.⁵

Implementation teams. North Carolina has structured implementation teams at multiple levels of their system. The Office of Early Learning's implementation design team consists of members of the Office of Early

⁴Developing an early childhood assessment that can be used at the beginning of kindergarten as well as other points in time to inform instruction is only one of several activities supported by the Early Learning Challenge grant. For more information on North Carolina's Race to the Top Early Learning Challenge initiative, see <http://earlylearningchallenge.nc.gov/>.

⁵We thank Daniel Tetreault, RTT-ELC K-3 Formative Assessment Project Lead in the Office of Early Learning (Pre-K – Grade 3), State Board of Education, Department of Public Instruction, for providing details about North Carolina's implementation plan via an interview conducted by Tamara Halle on November 17, 2014.

Learning within the Department of Public Instruction, and key internal and external stakeholders including members of the NC K-3 Formative Assessment Design Team. There are also four regional implementation teams, each led by two Office of Early Learning regional consultants. Each regional implementation team will support three districts by providing coaching and technical assistance to districts-level implementation teams. Each of the 12 districts implementing the K-3 Formative Assessment Process during initial usability testing in the early implementation stage will, in turn, support the development of school-level implementation teams. Regional teams will participate in meetings with district teams monthly, for about 90 minutes, to provide ongoing implementation support.

The state is currently in the process of selecting regional implementation team members. Some selection criteria include:

- proven experience in early childhood and early elementary education
- experience in building administration
- experience in district administration
- proven track record of following through with implementing a previous initiative
- knowledge of improvement cycles and systems change
- experience with coaching
- current practitioner-level experience (including university professors who supervise student teachers)
- existing relationships within the region they will serve, and
- at least 25 percent time available for the work of the implementation team (10 hours/week), with some available at least 50 percent time (20 hours/week).

In order to support the regional implementation teams in their work of supporting the individual district implementation teams, the state is providing six days of training for the regional implementation team members (two days per month for three months). The goals of the training are to: (1) introduce team members to implementation science frameworks, (2) orient team members to the K-3 Formative Assessment Process, (3) learn and practice appropriate coaching methods through a coaching model, and (4) provide content for regional meetings. By the sixth day of training, the intent is for regional team members to have good drafts of meeting agendas for meetings they will have with the district implementation teams they will be supporting. Members of the state-level implementation design team will also attend the regional meetings and provide feedback to the regional team members regarding their role of supporting implementation.

Data and feedback loops. Researchers at the University of North Carolina, Charlotte are assisting the state in developing several measures to collect implementation and fidelity data as the new K-3 Formative Assessment Process is implemented in classrooms. The intent of this data collection is to inform the continuous improvement of the implementation supports provided as the new assessment process is scaled-up statewide. First, an implementation measure will assess the outcomes of the implementation supports put in place for the K-3 Formative Assessment Process. This new measure will help tailor professional development for teachers and will be based on the “practice profile” that the implementation design team has developed for the new formative assessment process. It will capture the level of success that teachers have in using the data they gather during the formative assessment process for individualizing instruction for students. If the data show that teachers need additional support to be successful in these areas, then additional training or other adjustments to the implementation supports may be provided to teachers to help them improve.

Data are shared within and among linked implementation teams. The first team in the linked teaming structure (school, district, regional and state) to review the data is the school-based team. It may be that the instructional facilitator or coach assigned to a school (or a peer coach) would, based on the data, adjust the support provided to a teacher or teachers. If a coach is not available to provide school-based support, then

the data might be directed to the district-level team to make decisions about increasing support or adding additional training. If the data reveal a barrier or potential barrier to successful implementation that cannot be resolved by the district-level team, then the data are communicated to the regional-level team that will provide support to the district team. Some issues may be communicated this way to the state-level team to resolve (for example, if or when a state policy presents barriers).

Another implementation measure will capture performance data for the improvement of training. This new measure will be based on a practice profile that is informed by a literature review on effective professional development practices for engaging adult learners. For example, this new measure may provide information to inform the revision of particular teacher trainings. Finally, coaching measures will gather outcome and performance data for coaching. Data from this measure will provide feedback that the coaching regional implementation team members provide to district implementation teams and are aimed at supporting improvement in their coaching practices. In summary, data from implementation measures described above will inform adjustments and improvements to the implementation supports put in place so that teachers are successful in their use of the new formative assessment process and children benefit from this evidence-based practice.

Drafts of each of these new implementation measures will be used during the usability testing period planned for winter 2016 with the 12 districts. The data will be used to inform three-month improvement cycles. Teachers will use the new assessment process for three months before the University of North Carolina, Charlotte team observes activities in selected schools in the districts and gather data using the three measures. Based on their review of the data, they will provide feedback to the regional and district implementation teams so that training and coaching for the new assessment and instructional practices can be improved. About three months later, they will gather more data using the measurement tools and repeat this improvement cycle. Data feedback loops will engage teachers, administrators, regional consultants, and state implementation team members; the way information will flow up and down the state system will be articulated in a communication plan. The goal is to have this new system of continuous data collection, evaluation and improvement be sustained in the state, resistant to both staff turnover and systemic pressure that might threaten the intended purpose of the formative assessment process.

Infrastructure. The goal of the Office of Early Learning is to put strong implementation supports in place to sustain the formative assessment process. They have planned with an eye towards both scale-up and sustainability from the beginning (i.e., the exploration stage). They are working in collaboration with the Department of Public Instruction's State Implementation Team to build a regional infrastructure to support the scale-up and sustainability of any initiative. Although they do not yet have the capacity, the agency's long-term goal is to have one regional implementation team per every 100 schools.

Using RTT-ELC funding, the Office of Early Learning has developed four regional implementation teams that will support 12 districts during usability testing of the K-3 Formative Assessment Process. The regional implementation teams will work with the district implementation teams as they test the use of the outcome and performance measures. They will put in place implementation plans which will include communication protocols (e.g., who communicates with whom, how frequently, etc.), a professional development plan (e.g., when and how to provide training and support through coaching) and measures to assess the implementation infrastructure and practices (e.g., training and coaching, new policies, data systems, community supports, etc.) in both large urban and small rural districts. The information gathered in these 12 districts will be used to make adjustments in the implementation infrastructure (see Text Box for examples) and to inform scaling-up and sustainability in more districts and schools across the state.

In addition to developing and sustaining implementation teams and data and feedback loops, the state is also engaging community stakeholders in the initiative. For example, the Local Education Agency (LEA)

Advisory Council, which includes teachers from pre-kindergarten to third grade as well as principals, district administrators and other key stakeholders, is kept informed of the K-3 Formative Assessment Process implementation through information shared at quarterly LEA Advisory Council meetings and through periodic email communications. Prior to and throughout the assessment development period, the Department of Public Instruction engaged pre-kindergarten through third grade teachers, school and district administrators, department heads and faculty at institutes of higher education, families, the state PTA association, the North Carolina Birth Through Kindergarten Consortium and broader Birth Through 5 community through state-wide focus groups and input and information sessions.

Two examples of adjustments to organizational infrastructure to support implementation

1. During the validity pilot for the first seven constructs to be assessed beginning at kindergarten entry, teachers found it challenging to learn the new assessment content (construct progressions including student performance descriptors, sample assessment situations, and assessment tasks) in addition to learning the assessment process and the use of the new web-based platform and digital tools. To address this challenge and create a more hospitable environment for statewide initial implementation, the number of constructs to be assessed initially has been narrowed to two. In the fall of 2015, teachers will be asked to begin with the two areas of the assessment that they are most familiar with: Book Orientation and Print Awareness, and Object Counting. This will give them an opportunity to place more focus on learning the new assessment process as well as the digital tools provided for collecting and analyzing evidence of student learning. The remaining five constructs to be assessed beginning at kindergarten entry will be implemented statewide in the fall of 2016. The K-3 Formative Assessment Process will include 15 constructs once fully implemented.

2. The state will ask each of the 12 Usability Districts to create an inventory of all the initiatives and assessments required at the state, district, and school levels. Although the state only has an additional required reading assessment in kindergarten through third grade and summative assessments at the end of third grade, many districts have a number of additional locally-required assessments. This is especially true for assessments required at the beginning of kindergarten. During the piloting of the new K-3 assessment at kindergarten entry, one district decided that a district-mandated assessment was not required – at least not during the pilot test period. Another district is thinking about phasing out its home-grown kindergarten entry assessment to make space for the new statewide K-3 Formative Assessment Process, which will have its initial data collection point at the beginning of kindergarten.

The implementation plan goes well beyond the life of the RTT-ELC grant (i.e., 2016). The state implementation plan focuses especially on “systems intervention” – to establish a hospitable environment for the statewide implementation of the K-3 Formative Assessment Process. The implementation design team is working collaboratively with other state initiatives to identify systemic elements that could impede implementation and to ensure that there is coherency across the system as a whole. The NC Office of Early Learning is working to impact reform in the early grades so that the K-3 Formative Assessment Process and the instructional practices that this promotes become just another part of what is normally done in K-3 classrooms. Specifically, the K-3 Formative Assessment Process implementation design team is working with the Department of Public Instruction’s State Implementation Team to define how the K-3 Formative Assessment Process will become integrated within a larger multi-tiered system of support (MTSS) that has been adopted by the Department of Public Instruction and will be scaled-up statewide over the next five years. Currently, the data from other assessments used within the MTSS framework are used to make both instructional and high-stakes decisions. So it will be important to determine how the data produced through the K-3 Formative Assessment Process, which cannot be used to make high-stakes decisions, will

be used alongside other assessment data within the Agency's assessment system. In addition, formative assessment is often defined in different ways, so a goal is to promote a consistent message about formative assessment across state agency initiatives.

Introducing a New Planning Tool for the Field

Using the integrated, stage-based framework presented in this brief may be eased by having a planning tool that can orient implementation teams and other stakeholders in the activities and conditions that need to be addressed at each stage for each of the core elements of stage-based implementation. We offer such a planning tool in the appendix; it is meant to be a useful resource for practitioners, researchers, and policy-makers across multiple disciplines to plan for program or system development, evaluation, and sustainability.

Conclusion

Early childhood stakeholders are working every day to shepherd new and promising innovations through the stages of implementation. To ensure that their efforts promote effective implementation, three core elements must be attended to at each stage of implementation: 1) the structure and activities of implementation teams that provide the accountable structure for implementation at local, state, and national levels; 2) the use of data to address a range of questions and decisions as teams move through implementation and promote ongoing improvement and quality assurance; and 3) the development, installation, support, and sustainment of a well-aligned implementation infrastructure.

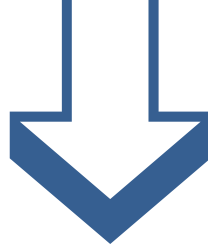
This brief discussed the importance of conducting stage-based work, proposed a simplified conceptual framework for implementation that goes beyond previous syntheses of implementation frameworks, and provided an implementation planning tool for early care and education programs and systems that highlights the key questions to be asked and activities which must occur, by stage of implementation, in order to effectively implement an innovation. We hope this information is helpful not only to early childhood practitioners, researchers, and policymakers but indeed to all stakeholders across disciplines in their planning for new initiatives, and the strengthening and sustaining of existing initiatives.

Appendix: Stage-Based Active Implementation Planning Tool

The following matrix outlines key questions to ask for each of the core elements (implementation teams, data and feedback loops, and infrastructure) throughout the four stages of implementation and serves as a stage-based planning tool. At each stage of implementation, implementation teams are conducting activities, using data and feedback loops to guide their decision-making and ongoing improvement, and developing, improving and sustaining infrastructure components to support implementation. These common elements of implementation serve different roles and functions at each stage. The purpose of this guide is to present an integrated stage-based framework that can be used by practitioners and administrators to plan their stage-based change process, by researchers to formulate implementation questions and develop formative and summative testing plans for different stages of implementation, and by policymakers to clarify what it takes to fund an effective implementation process.

Table 1. Integrated Stage-Based Planning Tool for Implementation of Early Childhood Programs and Systems

Exploration		
Core Features and Activities of Implementation Teams	Core Uses of Data and Feedback Loops for Decision-Making and Continuous Improvement	Core Activities to Develop Implementation Infrastructure (General and Innovation-Specific Capacity)
<p><u>Selection and Membership</u></p> <ul style="list-style-type: none"> • Has a team been formed to serve as an accountable structure for facilitating stage-based implementation? • Were team members mutually selected into their roles by volunteering for roles they were encouraged to apply for • Does each team contain one or more members who are knowledgeable about the intervention or change strategy, implementation infrastructure, use of data for decision-making and improvement, and systems change • Do members represent practice, supervisory, leadership, and policy perspectives either on a single team or through a linked teaming structure • Does the team include program developers or intermediary organizations? <p><u>Development of a Team Charter</u></p> <ul style="list-style-type: none"> • Does the team have a Charter or “Terms of Reference” (internal memorandum of understanding) that describes how it functions, communicates, makes decisions, and moves forward with its mission and objectives? <p><u>Development of Linked Communication Protocol</u></p> <ul style="list-style-type: none"> • Has the team developed “linked communication protocols” to provide accountability for making decisions and providing feedback? <p><u>Frequency of Meeting</u></p> <ul style="list-style-type: none"> • Does the core implementation team convene twice a month at a minimum (weekly recommended) at this stage • How often do ancillary teams (e.g., leadership team, community advisory board) meet? 	<p><u>Needs Assessment and Fit and Feasibility Assessments</u></p> <ul style="list-style-type: none"> • Needs: What are the needs of our target population • Fit: Does this initiative fit (or fight) with current projects, context, organizational and systems values and philosophies • Resources: What resources will be available to our early childhood program? What system should we choose to implement this new strategy or intervention • Evidence: What is the evidence that a potential strategy will work? Under what circumstances and with what target populations was this evidence generated? What outcomes can we expect if we implement this strategy well? • Readiness for Replication: How well defined is this strategy? Do we know the core components that make this strategy “work?” Will program development be necessary? How involved will the developer or intermediary organization be? • Capacity: Will early childhood practitioners meet minimum qualifications for implementation? Can we make the necessary structural, instrumental and financial changes necessary • Sustainability – Are there sufficient resources and capacity to sustain this innovation through full implementation and beyond? <p><u>Decisions Teams Make during Exploration:</u></p> <ul style="list-style-type: none"> • Will the proposed strategy meet our needs? • Do we have “what it takes” to move forward? Is moving forward both desirable and feasible? • How will we communicate these decisions to others? 	<p><u>Planning for the Implementation Infrastructure:</u></p> <p>Implementations Teams ask, “How are we planning for the infrastructure?”</p> <p>Infrastructure to Support Practice:</p> <ul style="list-style-type: none"> • Are early childhood practitioners open to the new innovation? • Are the organizational mission, leadership, and climate aligned with the new innovation? • Will staff with the necessary pre-requisites be available? • Is training available and affordable? Does training meet best practices for skill development? • Who will provide coaching and supervision? What steps will we need to take to ensure a coaching plan is in place? • How will staff performance be assessed? What steps are needed to ensuring a performance assessment system is in place? <p>Infrastructure to Support Organization & Systems:</p> <ul style="list-style-type: none"> • Are there the necessary community connections and resources to move forward with the innovation? • What questions will we need to answer to ensure that implementation is happening as planned? Where will we get this data? What technology needs do we have? • What administrative practices may need to change to support implementation? What policies, procedures or processes need to be developed or revised? • What systems alignment issues will need to be addressed to facilitate implementation?



Installation

Core Features and Activities of Implementation Teams	Core Uses of Data and Feedback Loops for Decision-Making and Continuous Improvement	Core Activities to Develop Implementation Infrastructure (General and Innovation-Specific Capacity)
<p><u>Development of Team Competencies to Support Implementation:</u></p> <ul style="list-style-type: none"> • Does the core implementation team... <ul style="list-style-type: none"> • know and apply the innovation or approach? • know and apply the implementation infrastructure? • know and apply improvement cycles? • know and apply systems change? <p><u>Development of Policy Practice Feedback Loops:</u></p> <ul style="list-style-type: none"> • Has the team developed active processes to gather practice-level information (e.g., barriers to implementation) from practitioners and supervisors implementing the new way of work and feed the information up the system to leadership? • Has the team developed active processes to ensure that leadership decisions are fed back down the system to those carrying out the new way of work? <p><u>Frequency of Meetings:</u></p> <ul style="list-style-type: none"> • Does the core implementation team convene weekly? • Does the core implementation team meet with leadership bi-weekly? • How often do ancillary teams meet? Is this often enough to support implementation? 	<p><u>Troubleshooting and Continuous Improvement:</u></p> <p>Are the linked communication protocols developed during exploration in place and happening as planned? How can communication be improved? Are we effectively engaging leadership in the process?</p> <ul style="list-style-type: none"> • In the event that team membership or structure changes, how can we ensure that team competencies are maintained? • What changes might we need to make before we initiate new ways of work? <ul style="list-style-type: none"> ○ Are changes to the innovation necessary? ○ Are changes to implementation supports (e.g., training, coaching, leadership strategies) necessary? ○ Are changes to data collection processes needed? <p>Has the implementation infrastructure we planned for during the exploration stage been developed and installed during this current stage of implementation?</p> <ul style="list-style-type: none"> ○ Are general capacities in place? ○ Are innovation specific capacities in place? <p><u>Decisions Teams Make during Installation:</u></p> <ul style="list-style-type: none"> • Is the implementation infrastructure installed (good enough) to move into initial implementation when began seeing consumers? • How might we improve the implementation infrastructure before we initiate the new way of work? 	<p><u>Installing the Implementation Infrastructure:</u></p> <p>Implementations Teams ask, “How are we developing and installing the infrastructure?”</p> <ul style="list-style-type: none"> • Infrastructure to Support Practice: <ul style="list-style-type: none"> • Have readiness plans for practitioners increased openness to the innovation? • Has the first cohort of staff been selected? • Has initial training occurred? • Have coaching plans been developed to support practitioners in the new way of work? <p>Infrastructure to Support Organizations & Systems:</p> <ul style="list-style-type: none"> • Has leadership expressed commitment to the new way of work? How has this been demonstrated? • Have agreements with community partners been established? Are partner expectations clear? • Have data systems been assessed and determined to be ready (or developed to be ready)? • Have policies, procedures and processes been revised or developed to support the new way of work? • Have systems partners been engaged?



Initial Implementation

Core Features and Activities of Implementation Teams	Core Uses of Data and Feedback Loops for Decision-Making and Continuous Improvement	Core Activities to Develop Implementation Infrastructure (General and Innovation-Specific Capacity)
<p><u>Improvement Cycles</u></p> <ul style="list-style-type: none"> • Have teams engaged in different types of improvement cycles including: • Usability testing to stabilize the model • Rapid cycle problem solving to detect strengths and gaps and develop solutions quickly • Policy practice feedback loops to ensure effective and efficient communication between policy and practice levels <p><u>Frequency of Meetings:</u></p> <ul style="list-style-type: none"> • Does the core implementation team convene monthly or less often? If less often, has this affected implementation negatively or is the innovation stable enough for less frequent meetings? • Does the core implementation team meet with leadership bi-weekly or at least monthly? • Are rapid cycle problem solving teams convened as needed? When they are convened, do they meet at least once a week to address the challenge quickly and then disband? <p><u>Development of Team Charter:</u></p> <ul style="list-style-type: none"> • Does the team need to revisit their team charter? • Has there been turnover? How are new members on-boarded? <p><u>Linked Communication Protocols:</u></p> <ul style="list-style-type: none"> • With whom (specific names, roles) in leadership, management, and the community is the implementation team meeting and communicating? Has this been effective? 	<p><u>Troubleshooting Practitioner Competency:</u></p> <ul style="list-style-type: none"> • How satisfied are practitioners with the support they have received to implement the new way of work? • What are data telling us about what is working or not working regarding practitioner selection, training, coaching? • What changes might we need to make to strengthen practitioner competency? • What are early fidelity or staff performance assessment data telling us about the strength of implementation? <p><u>Troubleshooting Organizational Supports:</u></p> <ul style="list-style-type: none"> • What are the data telling us about what is working or not working regarding organizational and systems supports? • What changes might we need to make to strengthen organizational alignment? • What are early outcomes telling us about the potential efficacy of the new innovation? <p><u>Decisions Teams Make during Initial Implementation:</u></p> <ul style="list-style-type: none"> • How can we continue to support the implementation infrastructure? • How can we more effectively problem solve? • Are we asking the right questions? • Are we collecting the data we need to guide our decision-making? • What changes might we need to make to the innovation, implementation supports, or data collection processes? • Are we ready to move to an outcome study? 	<p><u>Implementations Teams ask, "How are we supporting the infrastructure?"</u></p> <ul style="list-style-type: none"> • Infrastructure to Support Practice: <ul style="list-style-type: none"> • What is being done to support ongoing readiness of practitioners, supervisors and administrators? • Has there been staff turnover? How has this been addressed? • Has follow-up or booster training occurred? Is this needed? • Are practitioners receiving coaching as planned? <p><u>Infrastructure to Support Organizations & Systems:</u></p> <ul style="list-style-type: none"> • Does leadership continue to support the new way of work? How is this demonstrated? • Are community partnerships facilitative of implementation goals? • Are data systems operable? Are data reports usable? Is data entry and review built into regular practice routines? • Are there policy-practice alignment or misalignment issues? How are they being addressed? • Are additional systems interventions needed (e.g., policy, legislative, funding, community partners)?



Full Implementation

Core Features and Activities of Implementation Teams	Core Uses of Data and Feedback Loops for Decision-Making and Continuous Improvement	Core Activities to Develop Implementation Infrastructure (General and Innovation-Specific Capacity)
<p><u>Improvement Cycles</u></p> <ul style="list-style-type: none"> Does the team continue to use data and feedback mechanisms to support and improve the functioning of implementation infrastructure components? Please note that it is recommended the infrastructure is formally assessed every 6 months (minimum of annually). <p><u>Develop and Test Enhancements</u></p> <ul style="list-style-type: none"> Now that the implementation supports are routinized and integrated into the system... Has the core implementation team assessed whether enhancements to the innovation or implementation infrastructure may reduce the burden of implementation or increase efficiency of implementation with similar outcomes? Has the core implementation team assessed whether enhancements to the innovation or implementation infrastructure might improve outcomes? <p><u>Frequency of Meetings:</u></p> <ul style="list-style-type: none"> Does the core implementation team convene monthly or at least bi-monthly? Would implementation benefit from the team meeting more frequently? Does the core implementation team meet with leadership bi-monthly or quarterly? <p><u>Development of Team Charter:</u></p> <ul style="list-style-type: none"> Does the team need to revisit their Team Charter? Has there been turnover? How are new members on-boarded? <p><u>Linked Communication Protocols:</u></p> <ul style="list-style-type: none"> What are workers, supervisors, leadership, and community partners saying about the kinds of supports in place for implementation? How are feedback loops functioning? Do workers feel like they are heard? Is leadership getting the information they need? 	<p><u>Questions Implementation Teams Answer:</u></p> <p><u>Improving Practitioner Competency:</u></p> <ul style="list-style-type: none"> Are practitioners implementing the innovation with fidelity? How might the innovation or implementation infrastructure be enhanced to reduce burden of implementation or increase efficiency of developing practitioner competency without compromising outcomes (enhancements)? How might the innovation or implementation infrastructure be enhanced to improve outcomes for children further (enhancements)? <p><u>Improving Organizational Supports:</u></p> <ul style="list-style-type: none"> Are we getting the intended outcomes? How might the innovation or implementation infrastructure be enhanced to improve outcomes for children further (enhancements)? <p><u>Decisions Teams Make during Full Implementation:</u></p> <ul style="list-style-type: none"> How will this model be sustained? Is this model ready for large-scale implementation and/or scale up? Can we scale the innovation? Should we develop and test an enhancement to the model? What data will we collect to assess the enhancement? What results will we need to make the enhancement permanent? 	<p><u>Implementations Teams ask, "How are we improving and sustaining the infrastructure?"</u></p> <ul style="list-style-type: none"> Infrastructure to Support Practice: <ul style="list-style-type: none"> Can readiness be sustained and extended to new cohorts of practitioners? Are there more efficient or effective ways to train and coach staff? If the model is scaled, would training or coaching components need to be redesigned? <p><u>Infrastructure to Support Organizations & Systems:</u></p> <ul style="list-style-type: none"> What role can leadership play in replicating or scaling the initiative if outcomes are achieved? Are community partnerships facilitative of current and future goals related to implementation (e.g., replication or scaling)? How can data systems become more efficient and practical for helping to solve implementation challenges? If the model is scaled, would the data system need to be altered to support more robust analysis or information sharing? What contextual changes have happened that can affect systems alignment? How can we continue to monitor and improve alignment? Are additional systems interventions needed (e.g., policy, legislative, funding, community partners)?

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