

REFLECTIONS AND INSIGHTS

MOVING ECE IMPLEMENTATION RESEARCH FORWARD

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Implementation research is applied research. A rigorous scientific approach must be used to take account of the complexities of implementing programs and policies, in real time, for specific populations under specific conditions. Implementation research thus brings opportunities and challenges. This volume does not prescribe a single definition of implementation research. Instead, it draws attention to the potential of implementation research designs to fully investigate early care and education (ECE) programs in context. It also outlines how implementation research can advance the field of ECE by answering questions that are relevant to policymakers, which can help them better understand issues of equity, and so ensure that ECE programs produce positive outcomes for all young children. This chapter highlights the volume's main insights about what researchers should know and be able to do when they apply implementation research to further build evidence for the ECE field. Further, it rethinks the perspective and expectations for applied researchers seeking to engage in implementation research with policymakers and practitioners, and it emphasizes that shared operational knowledge is important for fostering collaborative research. Finally, it also underscores the need for future implementation research to prioritize strengthening the ECE workforce.

WHY IMPLEMENTATION RESEARCH IN ECE?

Many of the chapters in this volume (Burchinal & Farran, Ch.1; Farran, Ch.4; Brooks-Gunn & Lazzeroni, Ch.2; Iruka, Ch.3) summarize what we have learned from past research about how to advance high-quality ECE for young children. For example, researchers have asked questions about program quality and effectiveness, short- and long-term outcomes for children, which specific program and system characteristics are tied to particular child outcomes, and how programs or systems can be implemented at scale and still produce the same benefits as smaller, more targeted landmark studies (Gomby, Larner, Stevenson, Lewit, & Behrman, 1995; Ramey & Ramey, 1998; Reynolds, Mann, Miedel, & Smokowski, 1997). Many of these questions, shared by both researchers and policymakers, are still relevant today (Jones & Vecchiotti, 2020; Phillips et al., 2017).

At the same time, new and refined research questions are emerging as certain contextual factors suggest an urgent need to expand applied research, using it to produce a more nuanced understanding of how programs and policies are being implemented and how they affect specific subgroups of children differently. Such an approach would represent a shift from focusing solely on end results or outcomes to figuring out what in a program's execution has led to those outcomes and why and how. Given this orientation, implementation research has the potential to answer questions that policymakers and practitioners prioritize as they seek to continuously improve or strengthen the ECE policies and programs that they govern, manage, and provide. To fully capture how ECE programs and policies influence young children's development, we must pay attention to both outcome- and implementation-oriented research.

► A practical approach for ECE

Much of the foundational ECE research used randomized controlled trials (RCTs) to assess causation and program impacts. However, RCTs alone may not allow for an in-depth consideration of the context or conditions that affect implementation quality, and they take a long time to produce results (Brooks-Gunn & Lazzeroni, Ch. 2; Halle, Ch.10). Unlike the early days of ECE research, it is no longer easy to find a “clean” control group, because so many children are in some type of care. Thus, it is difficult to compare children with no preschool experience to those with such experience (Brooks-Gunn & Lazzeroni, Ch. 2). Furthermore, the majority of state prekindergarten programs are implemented in mixed-delivery systems that encompass both public schools and community-based settings (Barnett et al., 2016). In today’s context, implementation research may be more practical than RCTs. It examines program implementation in real time while considering contexts and other variables that influence quality and outcomes, and it gives stakeholders and policymakers more timely answers (Halle, Ch.10).

Hsueh, Halle, and Maier (Ch.8) suggest that implementation research can also help achieve two ECE goals: scaling up effective ECE programs and ensuring better outcomes for all children. Evidence of program effects alone is not enough to successfully strengthen, replicate, scale, and sustain ECE programs and to meet the diverse needs of all children (Hsueh, Halle, & Maier, Ch. 8). Achieving such ECE goals necessitates “an understanding of program implementation—that is, the process or specified set of steps by which a program is put into practice—as well as of variation in program implementation across contexts and populations” (p. 179). Implementation research goes beyond answering the question of whether effects are demonstrated to explaining why or why not.

► A bridge to understanding outcomes

ECE programs and policies are increasingly being brought to scale, particularly in states and municipalities (Friedman-Krauss et al., 2019). In the long term, if we cannot answer implementation scale-up questions related to how and when ECE is effective, we risk losing support for increased investment in ECE (Jones & Vecchiotti, 2020), because expectations for ECE to attain certain child outcomes might outstrip results (Brooks-Gunn & Lazzeroni, Ch. 2). Implementation research can help minimize this risk. As Maier and Hsueh assert in their contribution, strong implementation research is the key to achieving the positive child outcomes we see in small-scale model ECE programs when we turn to large-scale adaptations across populations and settings. Not only does implementation research ask what is happening—whether execution of a program or policy is accomplishing the stated purpose—it also asks how, why, and for whom a policy, program, or practice does or does not work (Maier & Hsueh, Ch.9). We urgently need implementation research to guide localities on the specific challenges and opportunities they may encounter as ECE programs are implemented in diverse real-world settings (Weiland, 2018). An implementation approach can also push ECE research forward by identifying deeper questions about the root causes of inequity and ways to eliminate disparities.

► Addressing inequity

As Iruka notes in her chapter, if we are to address persistent opportunity and achievement gaps, the field should cease “gap gazing” and blaming children as sources of disparities. Instead, we should investigate the root causes of such disparities and how ECE research-based practices and policies can help eliminate them. Nores adds that implementation research can measure the degree to which ECE programs and processes diminish or intensify inequities and unearth how program design or its implementation contributes to either result. Future investigations should ensure that “research components capture whether a program is working towards reducing inequities” and that those components are “validly defining these inequities in relation to the context and populations at hand”; they should also check that evaluations “are not introducing biases that reduce the chances of understanding whether the program works and, if it does, for whom” (Nores, Ch. 12, p. 279). Children of color will become the majority of children in the near future, the proportion of dual language learners will increase, and income-inequality will likely continue to grow, and so we need to accelerate implementation research that addresses equity issues and concerns in ECE as a way of promoting all children’s healthy development.

FORGING AHEAD IN ECE IMPLEMENTATION RESEARCH: REFRESHING THE APPLIED RESEARCHER PERSPECTIVE

Conducting applied research has always been challenging. Yet implementation research in ECE is potentially even more difficult and multifaceted. As this volume demonstrates, conducting sound, rigorous, high-quality ECE implementation research to build evidence for the field is no easy task. Realistically, researchers doing such work need to be willing to “embrace the messy” from initial design through final analysis and interpretation. The messiness reflects the complexities of the interventions and is precisely what makes the work so interesting and signals that the issues and questions explored are not easily answered.

What perspective is likely needed to embrace the messiness in implementation research? First, researchers engaged in such work will need to have a deep appreciation for ever-evolving contexts, typically encompassing multiple layers of policy and programmatic decisions and surrounding conditions. Second, in order to answer nuanced and interrelated questions nested within and across contexts, researchers will likely need extensive knowledge about complex, rigorous designs and methods of analysis. Third, given the nature of implementation research, in order to produce findings and implications that are useful and meaningful researchers will also need to consider developing more collaborative relationships with research partners, policymakers, and practitioners. Without such relevance and responsiveness to policy and practice, research will be unlikely to provide useful evidence that can be used to improve high-quality early learning opportunities that meet the needs of the children served.

► Evidence-building in context

Implementation research seeks to gain knowledge not so much about what was done as about how it was done; it takes an evolutionary approach, considering past and present contexts relating to changing resource inputs and altering outputs as programs and policies are revised in real time, and it examines adaptation as programs and policies evolve in response to environmental contexts and conditions (Pressman & Wildavsky, 1984). It requires flexible, responsive approaches and so cannot rely on the clear-cut, stable approaches that guide causal impact analyses. Studying implementation is worthwhile particularly because, as Pressman and Wildavsky (1984) note, implementation “is a struggle over the realization of ideas”; there is, they add, “no escape from implementation and its attendant responsibilities” (p.180). ECE implementation research particularly emphasizes understanding context in detail—how context influences program implementation and how the interrelationships between implementation context and program model lead to variation in program effects and outcomes (see Sachs, Ch. 7, for a case study).

Implementation research is further distinct in its organization of scientific inquiry in two ways: with an inward focus that considers “a program’s theory of change or implementation processes” and an outward focus that attends to the “larger context and infrastructure supports that surround a program” (Hsueh, Halle, & Maier, Ch. 8, p. 182). This dual focus allows researchers to examine sources of variation that may contribute to program effectiveness and to child outcomes, including among subgroups of children (Hsueh, Halle, & Maier, Ch. 8). Implementation research questions are of particular interest to ECE policymakers, because the approach builds evidence for program effectiveness through a continuous iterative cycle of execution as the program model evolves, adaptation as the program model and system supports are refined, and evaluation as the program model is tested (Maier & Hsueh, Ch. 9). Thus, not only can results and feedback be provided in a timely manner, but we can also examine implementation across a range of ECE settings, contexts, and populations (Ryan, Ch.11; Hsueh, Halle, & Maier, Ch.8).

Such evidence-building research on ECE programs and policies within a specific context contributes to our growing knowledge of what works or not, for whom, and under what conditions. Many ECE implementation research efforts take place at the municipal or state level. Such a local/state focus aligns with the fact that many ECE programs and initiatives are locally designed and regulated. Ryan (Ch.11) stresses that acquiring information about the factors that contribute to successful programs also includes understanding how local conditions, and how program adaptations made by local leaders and actors, shape implementation and program improvement strategies.

Undertaking various qualitative case studies of state and local implementation can show the how of ECE programming in various communities, thereby helping to identify the factors that influence differences in implementation (Ryan, Ch. 11). Ryan also explains how rigorous qualitative implementation studies provide practical, in-depth contextual information about local culture, conditions, and factors that help elucidate why programs fulfill their promise or not.

Similarly, Hsueh, Halle, & Maier suggest that examining local resource variation in implementation can help us figure out how to strengthen, replicate, scale and sustain ECE programs. Findings from local or state implementation studies have implications for areas with similar characteristics (Nores, Ch. 12). Empirical evidence from implementation case studies suggests that systematic relationships can emerge between different policy and program characteristics and among the problems encountered (Pressman & Wildavsky, 1984). Eventually, as knowledge about implementation in local contexts increases and similarities emerge, findings will serve to enhance ECE systems and programs nationally as well.

When conducting ECE implementation research in context, therefore, applied researchers will likely need to be comfortable with change, with challenge, and with responding to real-time circumstances that complicate the delicate balance between the inward and outward that a dual focus requires. It is not easy to develop or unearth linkages between theory and practice, and it can be even more challenging to assess such linkages in real-time, on-the-ground interventions. Further, researchers will need to be open to seeking knowledge about local program/policy context and to understanding how the nuances of that context influence their research inquires and design. It is not enough to know about programs or policies in general; researchers need to know how policies and programs are implemented or adapted locally.

► Rigorous and complex research design

Another area where researchers can “embrace the mess” is in research design. Accounting for implementation context calls for rigorous and complex mixed-methods research designs that respond to varying program scopes and scales within changing political landscapes—and researchers will likely need to know how to design and conduct such comprehensive, inter-related inquiries. As Halle points out, implementation research studies can be embedded in RCTs or can take the form of separate mixed-methods, quasi-experimental, or “innovative” designs (e.g., effectiveness implementation). Further, implementation research designs often use both quantitative and qualitative data sources so that they can fully describe and examine the constructs of interest, the relationships among constructs, similar and differential impacts on subgroups, the influencing and mediating factors in execution, and individual perceptions, attitudes and experiences—all in unfolding stages of implementation and in changing contexts (Halle, Ch. 10; Hsueh & Maier, Ch. 9; Ryan, Ch. 11). As a result, the applied implementation research approach is not easy to design or carry out. It is complex work, but that challenge is also what makes such work interesting and relevant to the field. It has great potential to drive and support the continuous quality improvement of ECE programs and policies.

Implementation research must be “embedded” in existing program and policy activities for it to best examine context and therefore be effective (Halle, Ch. 10; Sachs, Ch. 7), and this adds another layer of complexity. Often, implementation research aims to support continuous quality improvement efforts to make ECE programs and

policies more effective (Halle, Ch. 10; Maier & Hsueh, Ch. 9; Sachs, Ch. 7). Useful and meaningful implementation research requires applied researchers to actively and constructively work throughout the entire research process with the decision makers—policymakers and/or practitioners—who are implementing and supporting the program or policy and are responsible for how the program processes work and for outcomes (Halle, Ch. 10; Sachs, Ch. 7). In this volume, Jason Sachs explains his story of building and scaling the Boston Public Schools' prekindergarten-2nd grade program by intentionally using research to inform the process of change. His narrative reflects the realities encountered while conducting implementation research; researchers must “think through the steps necessary for change, which include being systematic, collecting data, staying on task, and providing staff room to grow and solve problems. That said,” he continues, “our team will change course and revise our strategies, methods, and partners as needed. But we do so within a framework we created for ourselves that is centered on curriculum, professional development, coaching, and partnerships” (p. 173). Across all its stages, implementation research requires a collaborative relationship between those examining the program/policy and the stakeholders supporting and applying the program or policy in practice in real-time (Pressman & Wildavsky, 1984). Given the nature of such research and the nature of kind of research that the ECE field is more used to doing, we may need to refresh our perspective on what is required to establish and maintain collaboration.

COLLABORATION: ESSENTIALS OF WORKING RESEARCHER-POLICYMAKER RELATIONSHIPS

As the ECE field continues to consider how best to establish, improve, and scale ECE programs and systems, policymakers and researchers are joining forces to determine what works, for whom, and under what conditions. In such work, researchers will likely need to acknowledge that many policymakers and practitioners operate within a high-pressure environment of just “keeping things going” (Pressman & Wildavsky, 1984, p. 172). ECE researchers and their partners also face challenges from financial constraints (National Academies of Sciences, Engineering, and Medicine, 2018) that ECE programs and policies are subject to, and sometimes they also face difficulties from heightened political attention and public scrutiny (Bardige, Baker, & Mardell, 2018). As a result, researchers and policymakers are operating in a realm where expectations for program and child outcomes must be managed (Brooks-Gunn, Ch. 2), especially given limitations in program investment, infrastructure support, service model comprehensiveness, and duration. As such applied researchers will likely need a deep commitment to building and maintaining research collaborations in such conditions before, during, and after their research investigations.

Whether implementation research is conducted through a research-practice partnership (RPP) model¹ or through another formal arrangement, applied implementation research must be collaborative in nature, especially when it aims to continuously build, refine, and scale ECE programs and policies in practice (Sachs, Ch. 7; Hsueh & Maier, Ch. 9). Research studies from the Institute of Education Sciences' Early Learning Network² (ELN) exemplify a collaborative structure in which policymakers, practitioners, and researchers are partnering to examine ECE issues relevant to implementation in individual studies and as a network. The ELN also supports research conducted through a long-standing RPP among the Boston Public Schools, the University of Michigan, MDRC, and the Harvard Graduate School of Education, profiled by Hsueh and Maier in this volume. New York City's Early Childhood Research Network, made up of representatives from multiple city agencies and researchers from several institutions of higher education, was also built to answer codesigned questions relevant to the ECE workforce in the context of scaling up a full-day universal prekindergarten program (Foundation for Child Development, 2018; Hsueh & Maier, Ch. 9).

To generate useful evidence that can improve practice, research questions must be highly relevant to the topics that interest the stakeholders who are responsible for supporting and implementing a program or policy (Tseng & Nutley, 2014; Tseng, Easton, & Supplee, 2017). At times, this may mean that the question being studied is not aligned with the question of most interest to the researchers; researchers must therefore be flexible and responsive if they are to provide data that can guide policy decisions. In such research, clear roles and interests are traditionally defined for the researcher, the policymaker (elected official, political appointee, career staff), and practitioners based on their separate domains of expertise and responsibility that help to navigate the researcher-stakeholder relationship (Zervigon-Hakes, 1995). Though it is true that researchers, policymakers, and practitioners are from "different worlds" (Zervigon-Hakes, 1995), the work they are joining forces to do requires intersecting knowledge across many areas of expertise, meaning that such collaborations can be challenging to navigate. Collaboration rests on a grounded or shared understanding between researchers and stakeholders about the research purpose, design, and course of work. For a collaboration to be productive or successful each party has the responsibility to acquire operational working knowledge of the context in which the partners live. Recognizing and respecting each party's expertise in an RPP is critical to successful collaboration (Henrick et al., 2017). Yet such recognition and respect is a minimum threshold; shared operational knowledge further extends the notion of effective collaboration.

¹ See Henrick, Cobb, Penuel, Jackson, & Clark (2017) for description of various RPP models.

² The goal of the Early Learning Network is to "positively impact the lives of children in preschool through Grade 3 by investigating the implementation of early learning policies and programs; identifying malleable factors associated with early achievement; and providing information, tools and products that policymakers and practitioners can use to build effective early learning systems and programs" (<http://earlylearningnetwork.unl.edu>).

► Shared operational knowledge

Shared operational knowledge builds on the idea that collaborative research is a two-way street (Tseng et al., 2017). Such mutual understanding can inform and refine the research process at every stage, from question identification, planning and protocol development, through exploration and the interpretation of findings and considering policy implications, thereby increasing the translation of knowledge across fields and the likelihood that research findings will change practice and policy. Building a collaborative process that encompasses the entire research process rather than just certain stages of the process is an important shift in approach for applied researchers. By providing a common ground, a shared understanding can also help to build and maintain trust

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among collaborators through research study design, data collection and analysis, and interpretation of findings. Shared understanding can also increase the clarity of the communications—discussing the work itself and the implications of the findings—that are essential to supporting healthy collaboration. It can also help to manage appropriate expectations—especially in the understanding of applied researchers—regarding what research can do to influence or support continuous quality improvement of ECE programs and policies and how it can do it. Research findings can be used in policy and

program decision making in various formal and informal ways. Applied researchers also need to understand how internal and external contextual factors influence how feasible it is to adopt suggested policy and program changes, the timing of their adoption, and the capacity for adopting them in both the near future and the long run.

As different forms of collaboration likely involve different types and levels of shared operational knowledge, implementation researchers need to be flexible and willing to change parameters. The necessary type and level of shared operational knowledge will vary for each scientific inquiry and for each program or policy under study. Crucially, operational knowledge means a working, functional understanding and familiarity; it does not mean having either just a rudimentary knowledge or deep expertise about other researchers' and stakeholders' content domains.

In part, applied implementation research is about developing the capacity to learn how programs and policies are executed in practice (Pressman & Wildavsky, 1984); thus, much operational knowledge is about practice. Researchers who engage in this work need to consider building their own knowledge about the fundamentals of partners' and stakeholders' work, especially because they are already examining the tensions between the planned ideal and actual implementation. For example, if they are to make meaningful policy recommendations, researchers need to understand a program or policy's specific purpose, elements, and processes. Some examples of shared operational knowledge that represent elements that impact the decision making of stakeholders include:

- the political and funding environments (whether the program and political leadership is invested in the program's success or failure, other priorities of the administrative leadership that may exert an influence, whether program funding reflects the true cost of the quality of care, whether the system is operating at a fiscal deficit or in lean ways, what issues or concerns local ECE advocates are addressing, the level of scrutiny in the local news media);
- the governing rules and regulations (potentially across several agencies involved in fragmented ECE systems and involve the policy or program service goal such as access or quality, or involve eligibility, enrollment, and attendance policies and procedures); and
- the program management aspects (why particular workforce or parent supports are in place or not, reasons for particular staffing models, caseloads or teacher-child ratios, why particular curricula or assessments are in place, characteristics of program staff and those served by the program, whether different populations of children have different access to services and why, past program initiatives that succeeded or failed).

All such contextual and operational considerations help shape a program and drive its implementation. Lacking such shared operational knowledge, researchers may find it difficult to collaborate with stakeholders to conduct program-scaling implementation studies addressing the policy and practice research questions.

A shared understanding can also help researchers maintain and nurture collaboration and trust needed among partners through all the stages of applied implementation research. Just as implementation comprises the stages of exploration, installation, initial and full implementation, the research study itself has stages that require continued collaboration. Collaboration with research partners does not end with the co-construction of research questions but continues through the finalizing of research designs, cooperation in data access and collection, and data reporting. In formal RPPs, collaboration goes further and includes joint interpretation of data findings and the co-development of policy and practice recommendations that are suggested by the research findings. Researchers may need to adopt a new perspective—they may need to step back from being “expert” researchers providing one-sided recommendations for program and policy changes to stakeholders and instead come to see themselves and their policy and program partners as drawing on their distinct and shared expertise to contemplate the research findings and form ideas for continuous quality improvement together. Jointly interpreting the data and determining the implications of the findings also helps guide collaborative thinking about how to account for particular implementation contexts and can provide more insights into research-to-practice connections.

To promote open, productive dialogue in these joint deliberations—and to fully realize the potential of research to shape policy and practice—trust and candidness between partners is required. Researchers need to communicate honestly but tactfully, especially when findings are challenging or unfavorable to the partner’s efforts, reputation, or political stake. Shared operational knowledge can help because it brings greater understanding of the issues, challenges, and stakes in play for the policymaker partners. Such shared operational knowledge may also help researchers manage any predetermined notions or advocacy agenda they have about the work at hand and the partner’s performance and capacity. A tactful communications approach utilized by the researchers and the stakeholders alike can lead to more long-term, honest, candid partnerships between researchers and policymakers. Thus, researchers who engage in ECE implementation research—which is deeply embedded in local context and collaborative partnerships—may need a fresh research perspective. Applied researchers may need to learn to appreciate context and complex research designs, embrace struggle and change, welcome new areas of knowledge outside their comfort zone, and employ new joint working relationships and diplomatic communication methods to establish, sustain, and nurture collaboration with partners such as policymakers. Armed with such knowledge, skills, and dispositions, applied implementation researchers can increase the potential of research to shape, improve, or transform ECE policy and programs in ways that allow these programs to better serve children and their families.

FORGING AHEAD IN THE REAL WORLD: A RESEARCH AGENDA FOR ECE IMPLEMENTATION RESEARCH

Policy- and practice-relevant implementation research questions related to the preparation, well-being, compensation, and ongoing professional learning of the ECE workforce are essential to continuous quality improvement in ECE programs and policies. Moreover, this area is primed for future implementation research, and the Foundation for Child Development is emphasizing it as a priority. The Foundation defines the ECE workforce as the professionals who educate and care for young children across a variety of settings (center and home-based) and systems (regulated and informal), as well as the individuals who provide leadership and support to them (e.g., lead teachers, coaches, home visitors, and administrators). The ECE workforce plays a significant role in the lives of young children in ECE programs, since the quality of their interactions with those they serve and the environmental stimulation that they provide directly influences children’s learning and development. Strengthening the ECE workforce will not only enhance the quality of early learning experiences, but lead to stronger outcomes for young children to help them meet their developmental potential. The Foundation’s ECE implementation research agenda centers on achieving the following goals:

- professionalize the early childhood field and build greater awareness of the status of the ECE workforce,
- enhance the quality of professional practice, and
- improve early educator preparation and ongoing professional learning.

Examples of implementation research questions related to the Foundation’s ECE workforce goals that can generate empirical evidence of interest to the Foundation include questions found in the Young Scholar Program guidelines.³ In addition, many of the recommendations made by authors in this volume for future research have implications for the ECE workforce and align with the Foundation’s questions. Burchinal and Farran suggest that the field should move beyond assessing process quality elements when it examines program effectiveness and instead explore specific evidence-based instructional practices and evidence-based curricula content and how they relate to children’s development. Such a focus on instruction can help increase the knowledge and skills of the ECE workforce.

Nores adds that what occurs in classrooms (e.g., practice, interactions, curricula content) cannot be separated from “the biases and inequities that children and families may experience in the education process and the social structures in which schools and individuals are embedded.” “Biases and racism,” she adds, “are present as early as preschool and kindergarten, whether it be in teachers’ perceptions . . . or children’s own perceptions” (p. 278). Therefore, research could measure the degree to which ECE program design and the classroom practices of the ECE workforce diminish or perpetuate inequities. Moreover, if we are achieving educational equity and providing high-quality ECE for dual language learners, research must define the appropriate knowledge and competencies for ECE professionals who work with these children. We particularly need to understand how to implement effective program language models, instructional practices, and continuous assessment practices (Espinosa, Ch. 6). Pianta and Hamre suggest that we need more research on how to scale effective professional development systems. Specifically, research should explore the focus and purpose of professional development in relation to specific practice outcomes, the specific supports, intensity, and duration needed to enhance classroom instruction, and the effectiveness of course-based professional development and using certified providers.

Given both the diversity of the ECE workforce (Whitebook, McLean, Austin, & Edwards, 2018) and the children served and the fact that there are few people of color in ECE leadership positions, Iruka argues that additional research should explore access and supports for leadership opportunities in ECE programs, schools, and systems. Such research could tell us how to strengthen programs and schools by including diverse perspectives, how to create environmental climates valuing people of color, and how to promote equitable upward mobility. Many of the authors advocate continuing research to explore the impact of ECE workforce inequities in terms of compensation, work environments and benefits, and professional support—especially in relation to teacher well-being, turnover, and retention. By following these directions, implementation research could guide us in strengthening and better supporting the ECE workforce in their work with young children.

³ For the Young Scholar Program guidelines please see: <https://www.fcd-us.org/about-us/young-scholars-program/>

CONCLUSION

Implementation research is complex and rigorous in its questions, design, and methods as it seeks to untangle how context influences program and policy execution and the intended outcomes. Applied implementation research in ECE it is not easy, and researchers must embrace the messiness involved in such conceptually complex work. Yet such messy investigations help answer the field's questions about how to ensure that high-quality ECE programs promoting young children's development can become the norm and not isolated exemplars. By committing to meaningfully explore the how in studies of what works (or not), for whom, and under what conditions, ECE can better serve all young children in all settings. Such a commitment also likely entails building collaborative relationships with policymakers and practitioners—that is, the decision makers and implementers who are responsible for and can change ECE policy and practice. To nurture this collaboration, researchers will need to build their own understanding of the operational knowledge that is key to the experience of the policymakers and practitioners. If shared knowledge informs research questions, design, methods, data collection and analysis, interpretation of findings, and discussions of implications, the result will be more useful and effective studies that can change policy and practice. This work may not be for the faint of heart. However, engaging in real policy and practice problem solving is one way that researchers can work to ensure that young children experience high-quality ECE programs that help them meet their full developmental potential.

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