Measurement and Evaluation Checklist

As the evaluation technical assistance partner for two portfolios of investments in Middle Years Math and Secondary Writing—funded by the Bill & Melinda Gates Foundation—Mathematica developed a set of tools to support grantees through a measurement and evaluation (M&E) process. The goal of these portfolios is to develop, refine, and scale evidence-based solutions (programs, products, or practices) that demonstrate success in improving educational outcomes for students who are Black, Latino, and/or experiencing poverty (the priority communities for the grants).

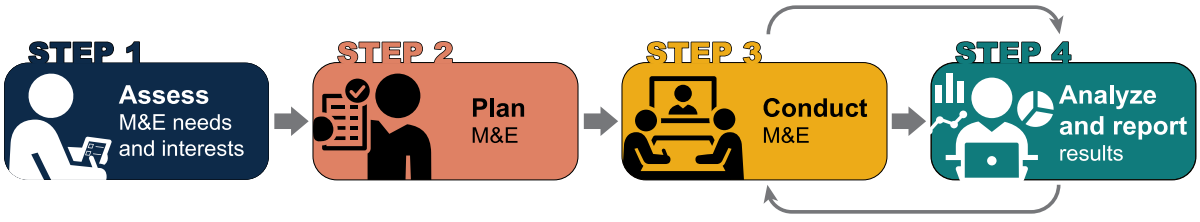
To expand the reach of this work and promote the adoption of evidence-based solutions more broadly, Mathematica has adapted the suite of M&E tools for a broader set of users—organizations implementing solutions, funders, research partners, and other stakeholders. The tools are designed to help users implement the M&E process in their own work. Organizations or individuals may choose to use one tool or the full set and can adapt the tools to their needs.

What is the M&E process?

The M&E process is designed to promote rapid innovation and scaling of promising solutions through generating timely and actionable evidence about what works for whom, and in what context. It uses an iterative approach to evidence building, in which the focus and design of the research is aligned to the solution's phase of development. Checkpoints are built in throughout to encourage users to pause and reflect on what has been learned so far and to refine the solution and the M&E plan as needed. More information on this iterative approach to evidence building and the phases of development is available here.

In each evidence-building phase, the M&E process has four key steps (Figure 1). In Step 1, organizations articulate their M&E goals, interests, and needs. In Step 2, they develop a plan—including research questions—to guide the M&E work. In Step 3, they execute the M&E plan designed in Step 3, including collecting the data needed to address each research question. Finally, in Step 4, organizations analyze the data they collected in Step 3, determine next steps, and report the findings.

Figure 1. Steps in the M&E process



The M&E process centers on equity and community voice as a core principle. Across all steps, organizations are encouraged to meaningfully engage community stakeholders to ensure the solution builds on the strengths and assets and meets the needs of the community it is intended to serve.

Who should use the Measurement and Evaluation Checklist?

Funders and organizations, with support from a research partner, can use or adapt the checklist.

What is the Measurement and Evaluation Checklist?

The M&E Checklist is a resource that guides users through an evidence-building process as they design, refine, and test a solution in collaboration with stakeholders from the priority community. The M&E Checklist includes four documents—one for each of the evidence-building phases: Design the Solution (Phase 1), Refine the Solution (Phase 2), Assess for Early Evidence of Success (Phase 3), and Validate Effectiveness (Phase 4). The checklist activities focus on iterative learning, which may mean completing a phase multiple times, moving backwards to a previous phase, or abandoning a solution altogether. The checklist serves several purposes:

- ✓ **Design and evaluation planning.** Organizations designing and implementing solutions can use the M&E Checklist with support from a research partner during Step 2, Plan M&E, as a guide to develop a detailed M&E Plan—or road map—to address key research questions for a given phase of the solution's development.
- ✓ **Reporting.** Organizations—and funders, where relevant—can also use the M&E Checklist during Step 4, Analyze and Report Results, to assess the extent to which the plan was executed as intended and the extent to which the targets for a given phase of the development were met (as reported in the M&E Reporting Template).
- ✓ **Organizational or grantee alignment.** The M&E Checklist can also be used to align goals and objectives for the M&E work across an organization and its funder, when applicable. For funders working with multiple organizations, the M&E Checklist also promotes continuity across M&E Plans, allowing for streamlined review, improved understanding, and cross-solution comparisons**.**

In each phase, the checklist includes the following:

- **Key assumptions.** The activities organizations should have completed or targets they should have achieved before entering the current phase. If your organization did not complete the activities described in the key assumptions, consider starting at an earlier phase.
- **Reflection questions.** The questions that organizations can ask themselves to help them revisit their assumptions, center equity in their work, and plan next steps.
- **Principles.** Focus areas that guide the work across all phases. The principles include equity and community voice, program articulation, implementation, outcomes, scalability, and knowledge sharing.
- **Planning and execution activities.** The activities organizations should plan for and then complete before exiting the phase. Although organizations may plan for and execute *some* activities within a phase at first, all activities should be completed before exiting the phase.
- **Checkpoints.** Prompts for organizations to pause and reflect on learnings to-date to inform improvements to the solution design and updates to the M&E Plan. At each checkpoint, organizations can review the findings to determine whether to advance to the next phase, continue iterating in the same phase, or return to an earlier phase.

Phase 3: Assess for Early Evidence of Success

The goal of Phase 3 is to conduct a small pilot study and demonstrate[1] that the solution is associated with improved outcomes for students in the priority community. Phase 3 requires clearly identifying the solution's core components and successfully implementing them. Before entering Phase 3, your organization should have already implemented their solution in the priority community and refined their solution based on lessons learned.

During Phase 3, organizations partner with stakeholders from the priority community to pilot the solution with a small sample of solution users and continue to refine the solution based on lessons learned. By the end of Phase 3, the solution and the clearly defined core components should be implemented successfully, and you should have demonstrated that the solution is at minimum, associated with improved outcomes (such as higher student attendance rates). If it is the first time implementing the solution with a defined priority community, organizations should enter at Phase 2 to adapt the solution for the priority community.

Key Assumptions. Before beginning activities in Phase 3, organizations should have completed the following activities (Please see Phase 2 activities for more guidance):

- ✓ Refined the solution, by updating the theory of change, based on the implementation context and lessons learned in Phase 2
- ✓ Successfully implemented the solution in the priority community in the same or similar implementation context
- ✓ Analyzed at least one preliminary indicator, demonstrating that the solution *might* achieve desired outcomes

[1] In each phase, you are building evidence that your solution improves outcomes for students or teachers. In phase 3, the type of evidence generated may vary depending on the research design, methods used, and sample size. Although a rigorous design (e.g. a randomized control trial or a matched comparison design) is preferred, it is acceptable to generate underpowered evidence (due to a small sample size) or noncausal evidence (e.g. correlational analysis). We recommend that organizations and research partners conduct a small pilot that is low cost and not burdensome to stakeholders before moving on to a larger, preferably randomized study in Phase 4.

As a fictitious illustrative example, in the previous phase, an organization and priority community should have **implemented** their solution in a defined priority community and **refined** their solution—including how the solution is implemented—based on lessons learned in Phase 2. In a school in Baltimore, the solution—a mobile application for students that built on city tracking data to alert students of transit delays to avoid long wait times at bus stops—was implemented for the first time in Phase 2. After implementing the solution several times, the solution was refined by:

- Requiring students, at the time of creating their app profile, to enter the time they need to arrive at school
- Incorporating a 20-minute teacher-led information session

The solution was successfully implemented based on this refinement before moving on to Phase 3.

Equity and community voice activities are central to the evidence-building process and are integrated throughout this checklist.

When organizations partner with communities and include the voices and interests of the community in designing the solution and planning and executing the evaluation, both the solution and the evaluation will be more relevant and meaningful to the priority community and are more likely to be successful. Activities associated with equity and community voice focus on identifying stakeholders from the priority community who will collaborate and partner with your organization to plan and execute all activities in each phase. Stakeholders can also help organizations identify the best ways to engage and learn from the priority community in each phase.

How are you planning to use this checklist?

Select one:

☐ **Planning.** Make a plan for how you will complete these activities.

☐ **Execution.** Confirm that the activities were completed.

Principle: Equity and Community Voice

Solutions are designed, improved, and tested in collaboration with stakeholders from the priority community.

Planning and execution activities

Organizations should plan for and complete the following tasks in Phase 3.

- ☐ Clearly and narrowly define the priority community in which implementation will occur and specify the solution users.
- ☐ Identify stakeholders in the priority community and partner with them to develop the evaluation plan and execute checklist activities, including interpreting findings.
- ☐ Define and share the purpose of the study with additional members of the priority community before the study begins and receive their support to conduct the study.
- ☐ Describe how you plan to collaborate and partner with stakeholders in the priority community to incorporate their perspectives throughout evaluation planning and execution to design, refine and test the solution.

Notes

Reflection questions

1. Who will determine the research questions for the study? How do you know the study addresses questions that are relevant to stakeholders?
2. For whom are you generating evidence, and what does evidence look like in this phase?
3 How will you get stakeholder buy-in for the study? How do you know that stakeholders support the study?
4. What does success look like at the end of the study? Do you and the priority community agree on how success is defined?

Checkpoint

Organizations should routinely pause and reflect on the perspectives of the priority community and ensure evaluation activities and solution improvements align with those perspectives. Review the Culturally Responsive Evaluation Resource Guide for additional resources and guidance on how to engage stakeholders throughout solution design, refinement, and testing.

☐ Planning ☐ Execution

Principle: **Program Articulation**

Solutions are well-articulated and continuously refined.

Planning and execution activities

- ☐ Iteratively refine the solution's activities and strategies (core components), outputs, and outcomes based on lessons learned during the study.
- ☐ Describe how you refined and improved the solution based on study findings.

Notes

Organizations and research partners should collaborate and partner with stakeholders from the priority community to plan and execute all activities.

Reflection questions

1. How will you engage the priority community to help identify the causes of why the solution was or was not implemented successfully or why the solution did or did not improve outcomes?
2. How will you know if an activity is a core component? How will you include the perspective of the priority community when clearly defining the core components?

Checkpoint

Organization should clearly define the solution's core components before proceeding to Phase 4.

Principle: Implementation

Solutions account for implementation context and are successfully implemented in the priority community.

Planning and execution activities

- ☐ Establish what implementation supports are needed as part of the solution design to ensure the solution can be implemented with adherence to the program model.
- ☐ Define which components of the program model are variable and can be adapted
- ☐ based on the implementation context. Note: this requires clearly defining the program core components and how these components were determined.
- ☐ Monitor implementation of the solution to confirm it was implemented as intended and identify observed implementation facilitators and barriers. Review the "3Us – Usability, Usefulness, Utilization" document for more information, including establishing measurable implementation thresholds.
- ☐ Meet or exceed "good" targets for implementation if using quantitative measures and describe how process targets for qualitative measures informed solution refinement.

Notes

Organizations and research partners should collaborate and partner with stakeholders from the priority community to plan and execute all activities.

Reflection questions

1. Are there additional supports you could provide to assist with implementation? How will you monitor implementation in ways that are low burden and cost effective?
2. Can the solution benefit from additional testing to see if the solution is usable, useful, and utilized?
3. If targets for implementation were not met, why not? Was there a failure in the research method, implementation, or theory? How can implementation be improved based on this information?

Checkpoint

If “good” targets for implementation are not met, the organization should return to Phase 2 and consider improvements to the solution based on study findings. Ensure solution’s core components are clearly defined and solutions are implemented as intended before proceeding to Phase 4.

☐ Planning ☐ Execution

Principle: Outcomes

Solutions generate evidence of improving outcomes for students and their teachers.

Planning and execution activities

- ☐ Analyze at least one outcome to show that the solution is associated with improved outcomes, such as:
  - ☐ Student math knowledge or writing proficiency (required)
  - ☐ Student enjoyment, mindsets, and engagement
  - ☐ Other short-term outcomes
- ☐ Identify, develop, or select measures with input from the priority community. Review the math and writing menus of measures for a list of recommended measures, if needed.
- ☐ Define the research design and methods you will use to conduct the study.
  - ☐ Randomized controlled trial (preferred)
  - ☐ Quasi-experimental design (e.g., matched comparison design) (preferred)
  - ☐ Correlational analysis (such as a pre/posttest) with statistical controls (acceptable)
- ☐ Define the planned number of solution users and non-users (if you are using a comparison group). Please review the Sample Size Guidance for more information on the recommended sample size for the study.
- ☐ Systematically document the business-as-usual condition or other comparison condition.
- ☐ Describe differences in outcomes across student groups or intersections of student groups or differences across different implementation contexts.
- ☐ Meet or exceed "good" targets for outcomes and describe rationale as to why "good" targets are ambitious.

Notes

Organizations and research partners should collaborate and partner with stakeholders from the priority community to plan and execute all activities.

Reflection questions

1. What type of evidence do you need to feel moderately confident that the solution is associated with improved outcomes for students or teachers?
2. How long do you expect the solution to take to lead the desired outcomes?
3. If targets for outcomes were not met, why not? Was there a failure in the research method, implementation of the solution, or theory of action?
4. If you implemented the solution as intended and did not achieve the outcomes, how can you refine the solution? Is it a good fit for the priority community? Why or why not?

Checkpoint

If "good" targets for outcomes are not met, the organization should return to Phase 2 and consider refinements to its solution based on learnings from the study. Organizations should meet or exceed "good" targets for outcomes before proceeding to Phase 4.

☐ Planning ☐ Execution

Principle: **Scalability**

Solutions can be expanded, replicated, and adapted to improve outcomes for more students.

Planning and execution activities

- ☐ Identify additional sites the solution could serve.
- ☐ Document the quantity and types of resources needed to implement the solution, as well as costs per student and per site.
- ☐ Collect information to assess if the solution is affordable and competitive with alternative solutions.

Notes

Organizations and research partners should collaborate and partner with stakeholders from the priority community to plan and execute all activities.

Reflection questions

1. How do you know the solution is affordable for organizations that might purchase or fund the solution? Are funding sources or supports for the solution sustainable?
2. How can you collect information about the cost of the solution in ways that are low burden?
3. Are there ways to reduce the resources needed to deliver the solution to make it more accessible or affordable?
4. How does the cost of the solution compare to alternative solutions?
5. Do the benefits of the solution outweigh the cost?

☐ Planning ☐ Execution

Principle: Knowledge Sharing

Presentation of research findings is easy to understand and is shared with others including the priority community.

Planning and execution activities

- ☐ Co-interpret study findings with stakeholders before they are finalized and shared.
- ☐ Share findings by facilitating a two-way discussion with the priority community. Use nontechnical language to describe key takeaways from Phase 3 and ways you will use the findings to refine and improve the solution.
- ☐ Share findings with the education field, where possible and relevant.

Notes

Organizations and research partners should collaborate and partner with stakeholders from the priority community to plan and execute all activities.

Reflection questions

1. How will you conduct a two-way discussion to encourage the priority community to freely share their perspectives and thoughts? What platforms can you use?
2. How will you capture feedback from attendees during the session?

Acknowledgments

The authors extend their heartfelt thanks to the many individuals who contributed to the development of this Measurement and Evaluation (M&E) Toolkit. In particular, we appreciate our grantee partners and the communities they serve for their rich engagement with and collaborative approach to the M&E process. We thank our technical assistance liaisons for pilot testing and providing feedback on the M&E process and early versions of these tools. At the Gates Foundation, we thank the Middle Years Math Investment team—especially Karen Johnson, Lewis Leiboh, Andrew Corcoran, Andrew Sokatch, Taina Knox, and Sara Allen—for their support, guidance, and encouragement. At Mathematica, we recognize Alexandra Resch, Ruth Curran Neild, John Deke, and Elias Walsh for their guidance and quality assurance review; Sheena Flowers, for her creative design ideas and superior production assistance; Brittany Tabora, for coordination with external expert reviewers; Liah Caravalho, for leading our dissemination strategy; Jennifer Brown, for editorial support; and Theodora Vorias, for her help developing the glossary.

The authors also thank the following 12 external experts who offered invaluable feedback on the structure and content of the M&E Checklist and supplemental tools: Dr. Kristine Andrews, Ideas to Impact, Inc.; Dr. Emily Barton, University of Virginia & the EdTech Evidence Exchange; Dr. Beth Boulay, Abt Associates; Cathryn Cook, Saga Education; Dr. Fiona Hollands, Teachers College, Columbia University; Dr. Stafford Hood, Center for Culturally Responsive Evaluation and Assessment/University of Illinois at Urbana-Champaign; Karina Jaquet, WestEd; Dr. Heather King, Impact Genome Project; Chris Liang-Vergara, AERD; Dr. Janelle Scott, University of California, Berkeley; Bi Vuong, Project Evident; and Dr. Tanisha Tate Woodson, Education Northwest. Responsibility for the final content of these materials is ours alone and should not be construed as individuals' or institutional approval of the tools.

In addition to guidance and input from staff and experts at the Gates Foundation, Mathematica, and many other organizations, we also consulted the following resources and standards to inform the development of this checklist:

- Loper, A., Woo, B., & Metz, A. (2021). **Equity is fundamental to implementation science**. *Stanford Social Innovation Review*, *19*(3), A3–A5.
- Regional Educational Laboratory Midwest at American Institutes for Research. (2018). **Aligning evidence-based clearinghouses with the ESSA tiers of evidence**.
- Richman, S., Maxwell, N., Needels, K., & Anderson, M. A. (2020). **Scaling Checklists: Assessing Your Level of Evidence and Readiness (SCALER). A guide for practitioners** (Final report submitted to the Corporation for National and Community Service). Mathematica.
- U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance, What Works Clearinghouse. **(Click here to reference the WWC Handbook** and **click here to reference Common Guidelines for Education Research and Development**).
- Woodson, T. (2020). **Using a Culturally Responsive and Equitable Evaluation Approach to Guide Research and Evaluation**. Mathematica.

Checklist Authors: Ryan Ruggiero, Mikia Manley, Virginia Knechtel, Kate Place, and Megan Shoji