



EF+Math Inclusive R&D Overview

Description

This resource is provided as an example of the Establishing Foundations Key Action: “Define explicit actions and reflection practices that help you reach your equity goals.” This document provides an overview of EF+Math’s foundational Inclusive R&D principles and practices, and served as a guiding document for the entire EF+Math community.

A key component of the Inclusive R&D principles is the equity first approach. The included equity guiding principles and equity first practices served as the foundation on which teams built their own specific equity goals for their research and product development. This document also includes explicit actions related to each “stage” of Inclusive R&D. It is important to note that these “stages” have been modified and adjusted (as can be seen in the EF+Math Resource Library Inclusive R&D framework page) to more accurately reflect how these stages were enacted in practice. Still, the foundational stages illustrated in this document offer a guiding framework on how to address equity goals at various stages of the R&D process. Please view the Inclusive R&D Overview below.

This Resource is part of EF+Math's Inclusive R&D Toolkit. It was last updated on 04.2021. To access the complete toolkit and other resources, visit www.efmathprogram.org.

EF+MATH

Inclusive R&D Overview

Overview

The goal of EF+Math is to design prototype math learning systems that strengthen executive function skills in ways that promise to dramatically improve math outcomes for Black and Latinx students and students experiencing poverty in grades 3-8. Our theory of action is that doing so requires an *Inclusive R&D* approach that a) challenges each of us as designers to build our own critical racial equity knowledge and cultural fluency, and b) centers Black and Latinx educators and students from the beginning and throughout the R&D process. This document provides an overview of EF+Math's approach to Inclusive R&D, including our definition, guiding principles and practices, a description of the three stages as aligned with program phases, and additional resources. While this overview provides a set of guiding principles and practices, individuals and teams within the EF+Math community are moving this work from theory to action and defining what Inclusive R&D looks like in practice.

Defining Inclusive R&D: The EF+Math Approach

Inclusive R&D is an equity-centered and inclusive process for developing innovative programs, which utilizes a set of principles and practices to center students, educators, families, and communities that are often left out of other human-centered design methods. EF+Math's Inclusive R&D approach is unique, though it draws upon many existing models, especially [Digital Promise's Inclusive Innovation](#) model and approach. It also draws from Liberatory Design from the [National Equity Project](#), [Design Justice Network](#), [Design Based Implementation Research](#), and more.

Equity First Approach

We hypothesize that building equitable math learning products requires an equitable process of discovery and development. Equity first R&D requires each team to commit to “personal and team-centered equity work on race, bias, and power; co-creating and implementing practices to address power dynamics, intention, impact, and a process for equity pauses; and an acknowledgement of historical impediments of racism and bias that anchors trust-building by pivoting power and centering community stories, lived experience, and cultural wealth” (Digital Promise). An equity first approach to R&D centers the voices and perspectives of all stakeholders, and not just those who traditionally lead research and development endeavors. A true equity first approach requires a commitment to an agile and iterative process, where innovation resides at the intersection of people, product, and process.

Inclusive Process

Inclusive R&D is a process that brings researchers, educators, and developers together to work collaboratively and to iterate together in an ongoing feedback loop that removes the silos between discovery, development, and commercialization. By having educators who serve priority students involved in the process from beginning to end, it ensures that the products or programs are useful and usable in real-world contexts. Likewise, by including rigorous learning science research in the discovery process, we ensure that the products or programs are based on what we know about how Black and Latinx students and students experiencing poverty learn. By including designers and developers, we ensure that the practicalities needed for scale (such as infrastructure, etc.) are considered throughout the process.

Inclusive R&D is an attempt to rectify challenges of other forms of R&D, where there is a bias towards relying on the researchers or developers as the drivers or leaders of the project, with educators and students simply giving feedback. It also recognizes that there exists a historical bias where formally recognized *content expertise* is often more valued in the process than *context expertise* that is primarily acquired through lived experience. Instead, Inclusive R&D places educators and those with context expertise at the center of the process to ensure their voices are equally valued and prioritized. Inclusive R&D means that everyone—researcher, educator, developer—brings multiple areas of expertise and individual perspectives to the table from day one, and the problem (as well as the solution) is not defined by a single sector. Therefore, an integrated, intentional process responds to the community based nature of education, resulting in a better design for practice and a much more equitable, efficient, and effective outcome.

Inclusive R&D Guiding Principles & Practices

Inclusive R&D is guided by the following equity principles and practices that are the touchstone to the work of all teams throughout the Inclusive R&D process. The principles and practices are intended as guidance for teams as they develop equity-centered discussions, design practices, research methods, products and more. They are also intended to be revisited as a self-reflection to ensure continued alignment with Inclusive R&D.

Equity Guiding Principles	Equity First Practices ¹
<ul style="list-style-type: none">Centering and elevating Black and Latinx students, students living in poverty, and their families, educators, and community members' voices and perspectives, and	<ul style="list-style-type: none">Develop social-emotional and situational awareness before entering any context. Practice self-awareness of one's own identity, values, emotions, biases, assumptions, and power. Intentionally seek

¹ Developed in collaboration with Digital Promise and their [Inclusive Innovation Model](#)


<p>partnering with them as co-experts with a shared ownership of outcomes.</p> <ul style="list-style-type: none"> ● Asset-based, assuming and affirming the mathematical brilliance of Black and Latinx students and students living in poverty, with a focus on elevating students', educators', families' and communities' inherent strengths and voice, including knowledge, skills, beliefs, values, perspectives, and cultural background. ● Rooted in racial equity and its intersections with considerations of class, gender expression, sexual orientation, ethnicity, religion, nationality, language, and ability. ● Sociopolitically engaged and responsive to the challenges of systemic racism due to systems and structures that perpetuate inequities. 	<p>to understand the context that Inclusive R&D occurs in.</p> <ul style="list-style-type: none"> ● Deeply engage each group of stakeholders throughout the R&D process to understand challenges and create high-value prototypes. Treat all co-design partners as co-experts, with a particular emphasis on honoring and incorporating educator and community member lived experience and expert knowledge about their community and the contextual factors that shape complex education challenges. ● Regularly reflect on the Co-Design team's actions, emotions, insights, and impact as designers and humans. Share learning and identify opportunities for continuous improvement. ● Recognize and celebrate progress to keep partnerships healthy, sustain energy, and create on-ramps to broaden participation.
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Inclusive R&D Stages

Inclusive R&D is conceptualized in at least three stages, each building upon the previous stage as teams deepen their engagement and partnership over the course of the program. This approach draws upon Digital Promise's [Inclusive Innovation model](#) as well as other human-centered design models and R&D models in education (see Additional Resources below). In each stage, teams of researchers, educators, and developers share leadership roles and collaborate fully in all decision-making processes. In Stage 1, teams work together to establish the foundation for Inclusive R&D, focusing on connecting with each other and committing to shared goals and values. In Stage 2, teams iteratively design, develop, implement, and improve their prototype learning systems. In Stage 3, teams will work to sustain and scale the developed prototypes and share their learnings with the broader community. The following table provides additional detail on the goals of each Inclusive R&D Stage.

Stage 1: Establish Foundations for Inclusive R&D	Stage 2: Inclusive R&D	Stage 3: Sustain, Scale, and Share
Prototyping Track Phase 1 <i>Fall 2020-Spring 2021</i>	Prototyping Track Phases 2 - 3 <i>Spring 2021 - Summer 2023</i>	Prototyping Track Phases 4 -5 <i>Fall 2023 - Summer 2025</i>

Note: components of each stage can occur simultaneously

Connect and Commit <ul style="list-style-type: none">- Build the critical racial equity and cultural identity foundation to enable effective and authentic co-design- Develop relationships, trust, and a shared commitment- Develop shared understanding of roles, communication and decision making processes. Inquire, Investigate, and Co-Ideate <ul style="list-style-type: none">- Deeply investigate the proposed challenge and approach from multiple perspectives, particularly acknowledging racial equity and cultural identity- Define mutually agreed upon problem statement, measures, and target outcome(s)	Co-Design & Develop <p>Create and prototype learning systems designed for Black and Latinx students and students living in poverty with a targeted universalism approach that can be tested using measures of accessibility, usability, feasibility, and student learning outcomes.</p>  Implement & Improve <p>Iteratively implement and improve prototype learning systems based on multiple progress indicators and target outcomes (including accessibility, usability, feasibility and student learning outcomes) that are culturally informed and shared and interpreted with community input.</p>	Improve Implementation & Scale <ul style="list-style-type: none">- Implement mature prototype in multiple contexts, improving local implementations and gathering knowledge for scaling- Improve scalability across multiple dimensions, including depth of change in classroom practice, sustainability, spread, and ownership Evaluate Impact & Share <ul style="list-style-type: none">- Evaluate mature prototype using defined culturally relevant measures and target outcomes- Collaboratively share outcomes with all stakeholders, ensuring all contributors have a voice
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By following the equity principles and practices throughout each stage of the Inclusive R&D process, researchers, educators, and developers will be well-positioned to meet our collective goal of designing equity centered EF+Math learning systems that will dramatically improve math outcomes for Black and Latinx students and students experiencing poverty in grades 3-8. Together, members of the EF+Math community are moving this approach from theory to practice to develop a tested model for how to do inclusive, equity centered R&D.

Additional Resources

Asset Based Community Design: A Toolkit

<https://resources.depaul.edu/abcd-institute/resources/Pages/tool-kit.aspx>

Decolonizing Edtech: Hunger, Fear, and Liberation

<http://decolonizingedtech.xyz/>

Design Justice Network Principles

<https://designjustice.org/read-the-principles>

Designing a Process for Inclusive Innovation

<https://digitalpromise.org/wp-content/uploads/2019/11/Designing-a-Process-for-Inclusive-Innovation.pdf>

Equity Centered Design Framework

<https://dschool.stanford.edu/resources/equity-centered-design-framework>

Executive Functions, Mathematics, and Equity: A Primer

<https://osf.io/zf74h>

Liberatory Design

<https://www.nationalequityproject.org/frameworks/liberatory-design>

Rethinking Scale: Moving Beyond Numbers to Deep and Lasting Change

https://www.researchgate.net/publication/237932539_Rethinking_Scale_Moving_Beyond_Numbers_to_Deep_and_Lasting_Change

Targeted Universalism: Policy and Practice

<https://belonging.berkeley.edu/targeteduniversalism>