Chan Zuckerberg Initiative

AN OVERVIEW OF THE RESEARCH WE GROUND IN
RFA: Effective School Practices to Support the Whole Child

OVERVIEW

At the Chan Zuckerberg Initiative (CZI), we recognize there are a number of frameworks in the field that are used in schools, research, policy, and other institutions to define whole child education. In many cases, a multitude of frameworks is somewhat necessary. This work, centered around our children's social emotional development is incredibly personal. Many prefer to personalize their work to the context and community they sit within.

While this is incredibly important and valuable, our work at CZI is to help ensure those definitions and frameworks are grounded in the latest and most coherent science of learning and development. That is why you'll find a few frameworks throughout this RFA that get referenced as foundational.

This document will walk you through:
- What we mean when we say "Whole Child"
- What we mean when we say "Curiosity" and "Self Direction"
- Principles of the Science of Learning and Development that should guide the design of optimal teaching and learning environments
- Why we are grounding this work in early adolescence
- Examples of experts in human development

These frameworks are not the only way to approach defining these skills, and by no means represent the breadth of knowledge we have on the science of learning and development. At CZI, we hope these frameworks provide a starting point for a collective understanding of how we hope to see the science of human development and the science of learning integrated into how we define "Whole Child" competencies and the ways in which we design learning environments for our students.

WHAT WE MEAN WHEN WE SAY "WHOLE CHILD"

American education was established before the science of human development emerged, yet we have failed to make the appropriate pivots and changes to reflect the incredible amount of knowledge developed around supporting child and adolescent development. For decades, the US education system has been primarily focused on academic development with limited attention to the broader goal of human development, and the role that development plays in overall learning and life outcomes. These understandings are required to maximize human potential and create equitable life opportunities for all children.

The concept of a "Whole Child" approach to education isn't new. It has cycled in and out of fashion for over 100 years, from Dewey, to the Character Movement, to Social Emotional Learning. Our work builds on these efforts to leverage the science to better define and articulate what it means to build learning environments that are oriented to addressing the needs of the "whole child."

The framework we have developed that anchors our definition of "whole child" is represented by what we call, "Comprehensive Student Development" and grounded in the science of child and adolescent development. Comprehensive Student Development has six domains that are interdependently and iteratively woven together throughout a student's learning journey:

- Academic development
- Cognitive development
- Social emotional development
- Identity Development
- Physical health
- Mental health

Academic development includes constructs like developing literacy, math and science proficiency - what is typically included in the requirements for a high school diploma.

We also include **cognitive development** which includes skills like short- and long-term memory, executive functions, language and visual processing. It's critical for us to name this domain because the education field often reinforces a false dichotomy between academics and social emotional learning. However, cognitive development is the construct in which all learning resides.

The **social emotional** domain is represented by a framework called the [Building Blocks for Learning](a framework created by our Director of Whole Child, Brooke Stafford Brizzard through her work at Turnaround for Children). This is a developmental framework of cognitive and social emotional skills and mindsets. Importantly, this framework places healthy adult attachment and engagement at the nucleus, with other foundational skills like self-awareness, self-regulation and growth mindset, moving toward higher order skills like resilience, academic tenacity, self-direction and curiosity.

We also name the **identity development** domain where we place every child's meaningful, authentic sense of purpose, their personal, cultural and collective identity, their personal values, their sense of

place. Just as social emotional development and learning are inextricably tied to cognition, such is the case for identity development in terms of its relationship to social emotional development.

The final framework domains are **mental health** and **physical health**. Again, these constructs are inextricably tied and play a critical role in children's overall health, learning and development.

Overall, we acknowledge that there is significant overlap and interconnectedness among each domain. While we are deeply committed to building individual skills and mindsets in each of the framework's domains, we understand that each individual resides within a complex context. For example, we can support and invest in a promising and effective sense of belonging intervention, but if we place that student back into an emotionally unsafe environment full of bias, that's not success. Likewise if we're building decision-making skills and agency around healthy choices for food, and then placing students back into a food desert, the hypocrisy of such actions would prove both immoral and ineffective. To this end, we think both about the individual and the context that an individual is in as critical, which is why designing learning environments with an eye toward fostering this holistic view of a child is critical – while also thinking deeply about the connections between in and out of school contexts.

WHAT WE MEAN WHEN WE SAY "CURIOSITY" AND "SELF DIRECTION"

Our definitions of Curiosity and Self-Direction are grounded in the Social Emotional Learning Framework Building Blocks for Learning, which you can find [here](#). It's a developmental framework of cognitive and social emotional skills and mindsets. Each element is a set of skills and mindsets that have been proven by research to strongly correlate to, and even predict, academic achievement. The framework draws from research in multiple fields to suggest movement from lower-order to higher-order skills. Overall, it provides one (and not the only) approach to grounding and defining social-emotional skills with the science of human development and learning.
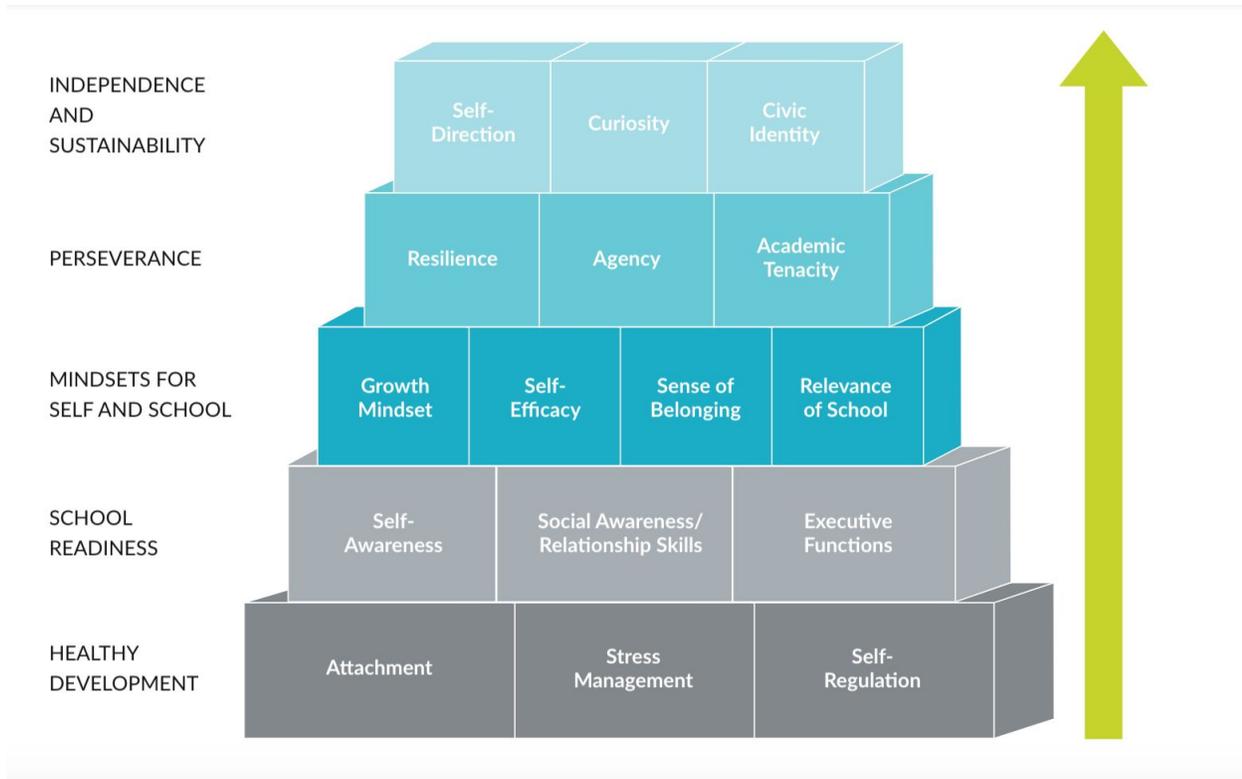
As you can see, the top of this framework includes higher order competencies such as Curiosity, Self-Direction and Civic Identity.

We are grounding this work in **Curiosity** and **Self-Direction**, and the opportunity to bring strong evidence that multiple skills and mindsets contribute to the development of these higher-order skills. The following provides stronger illustrations of these skills and the potential areas to focus on to support their development.

Curiosity

A curious individual values and draws energy from pursuing new knowledge, fueled by optimism and a growth mindset. But curiosity is more than just wonder and excitement to explore and learn. A number of skills contribute to an individual's ability to demonstrate curiosity and to prioritize the actions associated with it in the face of challenge or competing priorities.

This includes the **analytical skills** like critical thinking and problem solving required to frame and pursue focused and strategic questions that will contribute productively to learning. Curiosity also requires **stress management** skills that allow an individual to tolerate and embrace ambiguity and change, to navigate through confusion, and to take the most appropriate path toward learning even if it is the more difficult one. A curious person shows **resilience**, persevering in the face of failure or challenge. Curiosity is not an isolated endeavor involving inner dialogue and individual exploration alone. It requires social awareness and **interpersonal skills** like empathy, active listening, and collaboration to learn from and with others. Curiosity requires knowing when, where and how to seek help and support. It also requires the individual to demonstrate **agency** and **self-advocacy** for the permission, resources, and space to pursue learning, particularly in environments where the structures and routines might run counter to the conditions necessary for that individual's exploration and learning.

Self-Direction

Self-directed learning and development requires a complex set of skills and mindsets. First and foremost is deep knowledge of one's self (**self-awareness**). In addition to understanding one's strengths and areas for growth, an individual needs to be aware of what motivates him/her in order to plan, execute, and monitor the process of learning and development. With awareness of those conditions where one might be less motivated, the individual must be able to identify the right incentives and supports to stay on track. The individual must also be aware and responsive to predictable stressors and distractors so he/she can plan ahead to manage or avoid what might create counter-productive learning conditions. A self-directed individual also relies on positive mindsets: belief in one's capabilities (**self-efficacy**) and in the learning that comes with effort (**growth mindset**). Self-direction requires a set of higher order cognitive skills often referenced as **executive function**. These include skills involved in goal-setting, planning, and time and task management for short- and longer-term tasks. This also includes ongoing monitoring and evaluation, and the flexibility, problem solving and skills connected to **resilience** to shift actions or strategies in relation to the goal, particularly in the face of challenge or failure. Self-direction does not mean one has to go it alone; instead it requires **agency**,the skills to seek help and support, and then knowledge of when this is necessary.

PRINCIPLES OF THE SCIENCE OF LEARNING AND DEVELOPMENT

An additional set of principles that ground our approach to partnership and investment in the space include the Implications from the Science of Learning and Development. You can find a summary of the Science of Learning and Development Initiative here, and can read the published papers on the Science of Learning and Development here, here and here.

From these principles comes a way to articulate how the sciences of learning and development should be used to build optimal learning environments for students. The principles we find most instructive include:

I. Conditions for learning that support student success along the developmental continuum:
These include supports for positive, trusting relationships; attachment and emotional connections; physical and emotional safety; and a sense of belonging and purpose.

Key insights from the science of learning and development and from educational research suggest the following principles for practice in this domain:

1. School and classroom structures should be designed to create and support strong attachments and positive, long-term relationships that provide academic and social emotional support for cultivating developmentally-appropriate skills, emotional security, resilience, and student agency.
2. Schools and classrooms should be developed as culturally responsive learning communities in which all children feel a sense of physical and psychological safety, as well as belonging. Teachers should engage in practices that help them know their students well so that they can respond to children's specific needs, interests, readiness for learning, and opportunities for growth and mastery.
3. School practices should be designed to strengthen relational trust and promote cultural competence among educators, school staff, and families to provide deeper knowledge about children and greater alignment between the home and school.

II. **Curricular designs and instructional strategies that support academic capacity, competence, efficacy, motivation, metacognitive skills, and mastery**. These designs feature well-scaffolded instruction and ongoing formative assessments that fuel and support personalized and collaborative learning, take students' prior knowledge and experiences into account, and provide the right amount of challenge and support on relevant and engaging learning tasks.

In the domain of instruction and curricular design, the science of learning and development suggests the following principles for practice:

1. Teaching should build upon children's prior knowledge and experiences to utilize existing expertise, avoid cognitive overload, and scaffold future learning effectively as it expands to new areas of content and skills. Given what each child is ready to learn, teachers should structure appropriately challenging activities that balance what a child already knows, with what he wants and needs to learn.
2. Teaching should support engagement, motivation and understanding by designing relevant, problem-oriented tasks that combine explicit instruction about key ideas – organized around a

conceptual map of the content domain being taught – with well-designed inquiry opportunities that tap multiple modalities for learning.

3. To enable learning that is transferable and supports a growth mindset, teaching should be designed to develop metacognitive thinking, agency, and self-efficacy, including opportunities for self-direction, goal-setting and planning, and formative assessment with regular opportunities for feedback, reflection, and revision of work.

III. **Support for the intentional development of social, emotional, and cognitive skills, mindsets, and habits.** These include self-regulation, executive function, intrapersonal awareness and interpersonal skills, as well as growth mindsets and a sense of agency that support resilience and productive action.

The science of learning and development suggests the following principles for practice:

1. Schools and classrooms should provide regular opportunities to integrate social, emotional, and cognitive skills (e.g., intrapersonal and interpersonal awareness, cooperation, conflict resolution and rich language) into academic curricula and throughout the day.
2. Students should receive guidance and support to develop foundational skills, habits, and mindsets that promote perseverance, resilience, agency, and self-direction (e.g., executive function, self-regulatory routines, stress management, growth mindset).
3. Behavioral supports should foster belonging, and aim to be educative and restorative rather than punitive (i.e., teach behaviors, encourage students to take responsibility, make amends, and proactively contribute to their community).

IV. **Structures that reach beyond the classroom to provide systems of academic and social support, including personalized supports that respond to students' needs and address the effects of adversity.**

To address these needs, the science of learning and development suggests the following principles for practice:

1. Schools should create a collaborative multi-tiered system of supports, based on a shared developmental framework uniting staff, families, and support providers as they address learning barriers and meet student needs both in and out of the classroom.
2. Schools should develop internal student support structures (e.g., counseling and student support teams) and coordinate access to integrated services (including physical and mental health and social service supports) that enable children's healthy development, via on-site supports and partnerships with community providers.
3. Extended learning opportunities should be designed to support personalized instruction and mentoring that nurture positive developmental relationships, support mastery learning, and close achievement gaps.

WHY ARE WE GROUNDING THIS WORK IN EARLY ADOLESCENCE

Finally, we ground a large part of this work in the period of early adolescence which we define as 11-years-old (6th grade) to 18-years-old (12th grade). You can find the full summary of the National Academy of Sciences report, *The Promise of Adolescence* here.

A recent report released from the National Academy of Sciences, *The Promise of Adolescence: Realizing Opportunity for All Youth*, highlights how critical this period of development is. According to the report, "adolescence is a period of dynamic brain development second only to infancy with changes in brain structures, functions, and connectivity."

There are many other reasons this period of time is particularly interesting–related to the development of identity processes, developing a sense of autonomy, purpose, problem solving, and many other important skills that set children up to reach their full potential in young adulthood. And yet, most of the interventions developed and studied related to social emotional skills focus on early and middle childhood. However, as the research on early adolescence develops, highlighting how critical this period is in shaping who our students become, the opportunity grows to create developmentally responsive and evidence-based practices in adolescence. This RFA is an opportunity to support these efforts.

While the ways in which adolescents' brains develop are heavily influenced by early neural development in utero and infancy, the brain's plasticity during adolescence provides prime opportunities for building social emotional skills and continued cognitive development,   given the appropriate environmental inputs and experiences. For example, the brain areas that support planning and decision-making are developing during this period of time, along with continued adaptability to new learning. Additionally, according to *The Promise of Adolescence*, "compared to adults, adolescents have a significantly less mature cortical system and tend to utilize these regions less efficiently, and this impacts their top-down cognitive abilities including planning, working memory, impulsivity control and decision making." Due to changes in the hippocampus and amygdala, students might experience a suppressed fear response in certain contexts. This can be particularly important for the new contexts they begin to explore, but it's also a tremendous opportunity to spawn and explore creativity in healthy ways. Additionally, the brain is particularly vulnerable to toxic experiences during this time, due to increased sensitivity to rewards and increase in risk-taking behavior. Therefore, these behaviors must be supported and also scaffolded so as not to be taken to an unhealthy extreme.

As research demonstrates, adolescence is a tremendously important period for growth and development, and provides an optimal landscape for infusing research-based scaffolds and supports to bolster the maturing cortical systems.

EXAMPLES OF EXPERTS IN HUMAN DEVELOPMENT

To provide additional context about research that is relevant to potential practices, we have generated a list of organizations and experts in fields related to curiosity and self-direction, as well as adolescent development.

This list is not exhaustive. It is meant to illustrate potential areas of research and expertise, not to endorse a limited list.

We hope to share this list as a starting place for teams who are at the early end of exploring the field of human development. And to inspire different approaches for engaging the science of learning and human development to improve their practice.