



C³CREATE

Promoting Creativity in Childhood:

Moving from *why?* to *how?* through library programs

Erica Fortescue
Associate Director, Innovative Learning
Center for Childhood Creativity

Webinar Agenda



- Introductions
- Research
- Activities

About the Presenter



Erica Fortescue
Associate Director, Innovative Learning
Center for Childhood Creativity

Our Mission: To ignite and advance creative thinking for all children



Creativity = Workforce Readiness

18th Century
Agricultural
Age



19th Century
Industrial
Age



20th Century
Information
Age



21st Century
Conceptual
Age



Advisory Board Members



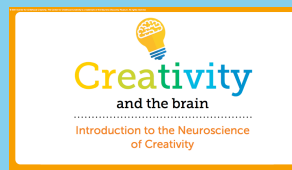
Partnering Institutions



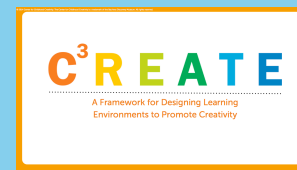
Research



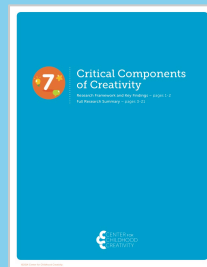
Shared Discoveries



Creativity and the Brain



C³REATE

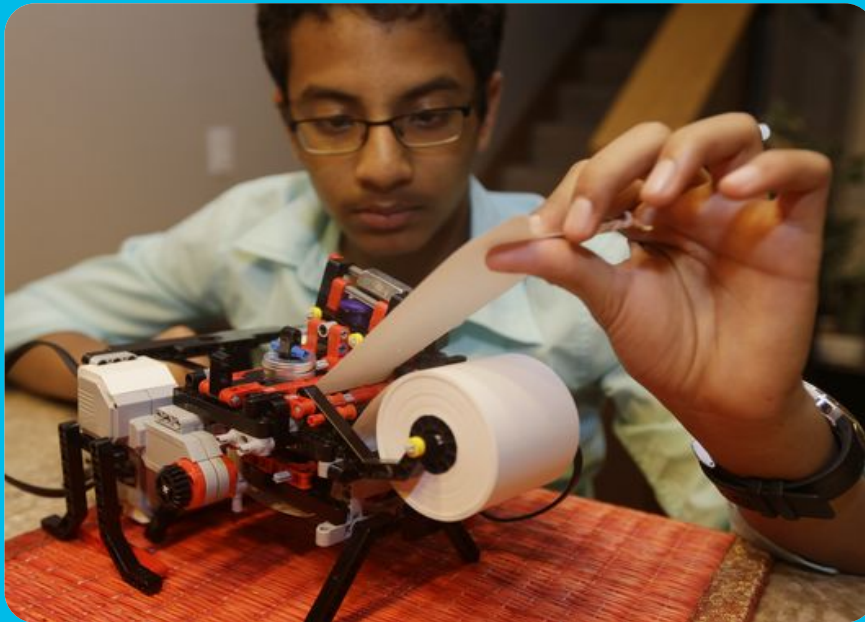


7 Components of Creativity



School Readiness
(in progress)

Key Research Questions



1. What **SKILLS** contribute to children's creativity?
2. What types of learning **ENVIRONMENTS** foster creativity in children?

What SKILLS contribute to children's creativity?

	Components	Description
COGNITIVE	 Imagination & Originality Imagine and explore original ideas	Creativity involves producing original ideas that are unusual or novel, and it sometimes involves combining two or more different concepts to create a new, synthesized idea. Children express their imagination and original ideas through pretend play and the creation of imaginary companions and make-believe worlds.
	 Flexibility Maintain openness to unique and novel experiences	The interaction of intelligence and creativity often begins with the flexible combination and modification of prior concepts or strategies to produce new representations. Children can experience flexibility by seeing from different perspectives, remaining open to new and challenging experiences, or (especially as they become older) gaining awareness of how only seeing from a single perspective can limit their creativity.
	 Decision Making Make thoughtful choices that support creative efforts	Discretion, judgment, and decision making play an important role in the development and expression of creativity for children. Decision-making skills require convergent thinking, which is critical to creativity because it allows individuals to refine ideas and to select the best possible answer from the ideas generated to solve a problem.
SOCIAL & EMOTIONAL	 Communication & Self-Expression Communicate ideas and true self with confidence	Communicating one's unique perspective plays a vital role in creativity by allowing individuals to express their feelings, ideas, and desires through language, art, and physical movement. A sense of confidence and connection to authentic feelings allows children to express their unique insights and thoughts with others.
	 Motivation Demonstrate internal motivation to achieve a meaningful goal	Motivation is at the core of the developmental experience and inspires children to explore and satisfy their curiosity. When individuals are internally motivated, acting without the promise of a reward, they are more creative.
	 Collaboration Develop social skills that foster creative teamwork	Collaboration allows for the exchange of ideas among children as they work to find a solution for a problem or project. Working together towards a shared goal fosters perspective-taking and provides a chance for children to explain and expand their thinking in new ways.
PHYSICAL	 Action & Movement Boost creative potential through physical activity	Exercise and physical activity are associated with better focus, enhanced memory, and greater ability to learn. Action and movement stimulate the building blocks of learning in the brain, and regular exercise can act as a cognitive enhancer to promote creativity.

This research was made possible by the generous support of Disney Citizenship.

What types of ENVIRONMENTS foster creativity in children?

C³	CHILD DIRECTED	Research shows: When children initiate learning, they engage more deeply and create connections between the material and their previous knowledge and experiences. How to apply it: Providing time for children to take ownership of their learning and make decisions promotes creative exploration and the development of higher level thinking skills.
R	RISK FRIENDLY	Research shows: When children understand that their effort matters more than any single outcome, they seek out challenging new experiences, and show resilience. How to apply it: Praising children's effort ("You worked hard") rather than their inherent ability ("You're so smart") helps them develop a learning mindset and encourages them to take risks and express their creativity without fear of failure.
E	EMOTIONALLY ATTUNED	Research Shows: Positive emotions such as joy and interest are correlated with creative thought patterns and decreased stress, which aids the transfer of information into long term memory. How to apply it: Showing children both verbal and nonverbal support creates feelings of safety and acceptance, which promote confidence and creative thought.
A	ACTIVE	Research Shows: Physical activity strengthens memory and performance because it engages different parts of the brain and provides a break before refocusing. How to apply it: Creating short, structured breaks for children to be physically active helps direct more oxygen to their brains, which enhances concentration and perseverance.
T	TIME FLEXIBLE	Research shows: When children are fully immersed in an activity and have entered a state of flow, they learn in a deep and joyful way by imagining and testing new ideas. How to apply it: Leaving time for children to complete tasks and games at their own pace allows them to experience learning in an ongoing, internally motivated way while their brains form new connections.
E	EXPLORATORY	Research shows: Open-ended questions and prompts support the development of divergent thinking (exploring many possible solutions), a critical component of creativity. How to apply it: Asking questions like "Why do you think that happened?" and using statements like "Tell me more" encourage children to engage deeply with a subject and form multiple conclusions, rather than being limited only to finding the right answer.

SKILLS: 7 Critical Components of Creativity



Imagination & Originality



Flexibility



Decision Making



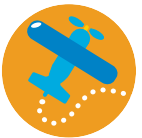
Communication & Self-Expression



Motivation



Collaboration



Action & Movement

cognitive

social &
emotional

physical

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C³CREATE

A Framework for Designing Learning
Environments to Promote Creativity

Developed by the Center for Childhood Creativity

Child-Directed

Risk Friendly

Emotionally Attuned

Active

Time Flexible

Exploratory

A photograph of four children of diverse backgrounds working together on a project. They are gathered around a table, focused on their task. One boy in the center is using a screwdriver on a small electronic device. To his left, another boy watches. To his right, a girl with a large blue bow in her hair is also working. In the foreground, the back of a fourth child's head is visible. The table is cluttered with various materials, including wires, a small white cup, and other components. The background is slightly blurred, showing an outdoor setting with trees and a fence.

C hild-directed

Features of Child-Directed Learning



- Choice
- Curiosity
- Connection

Child-Directed

Not new ideas:
Dewey, Piaget, Vygotsky, Bruner, Montessori

What is new is the neurological evidence showing why?

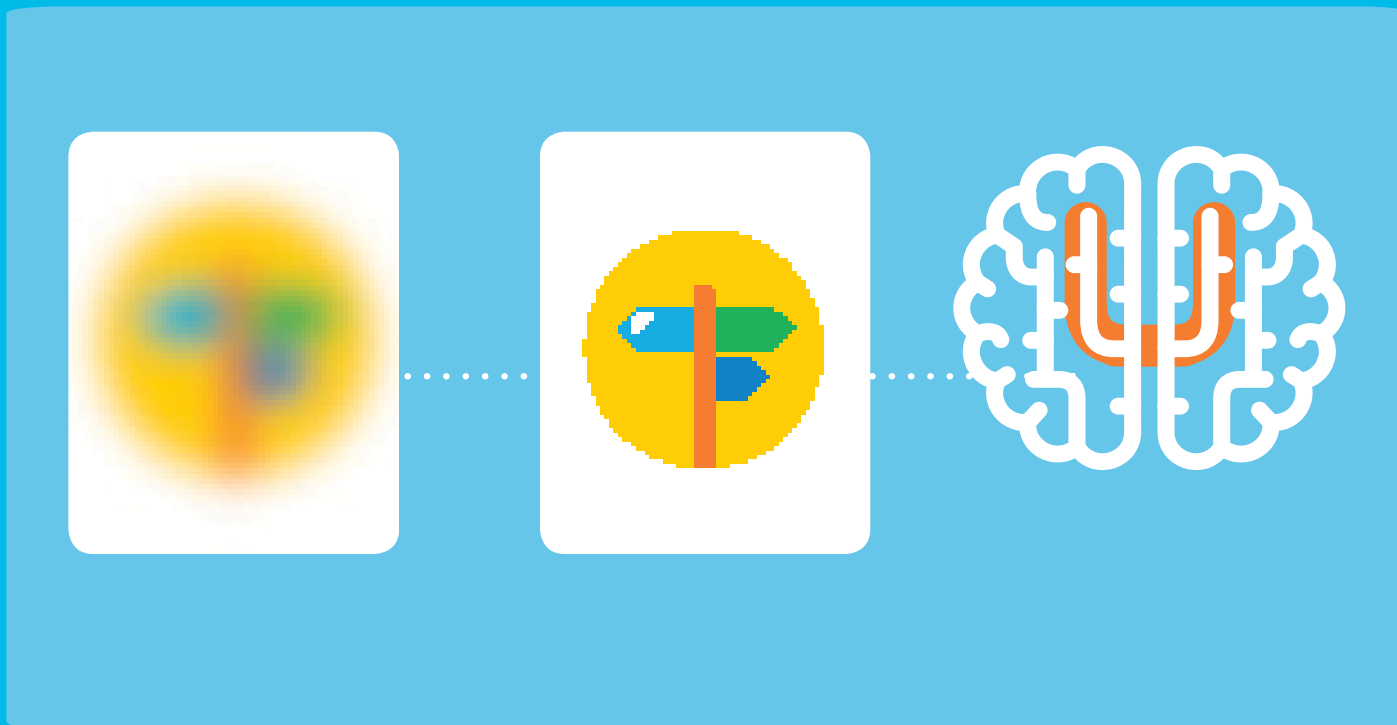


Child-Directed



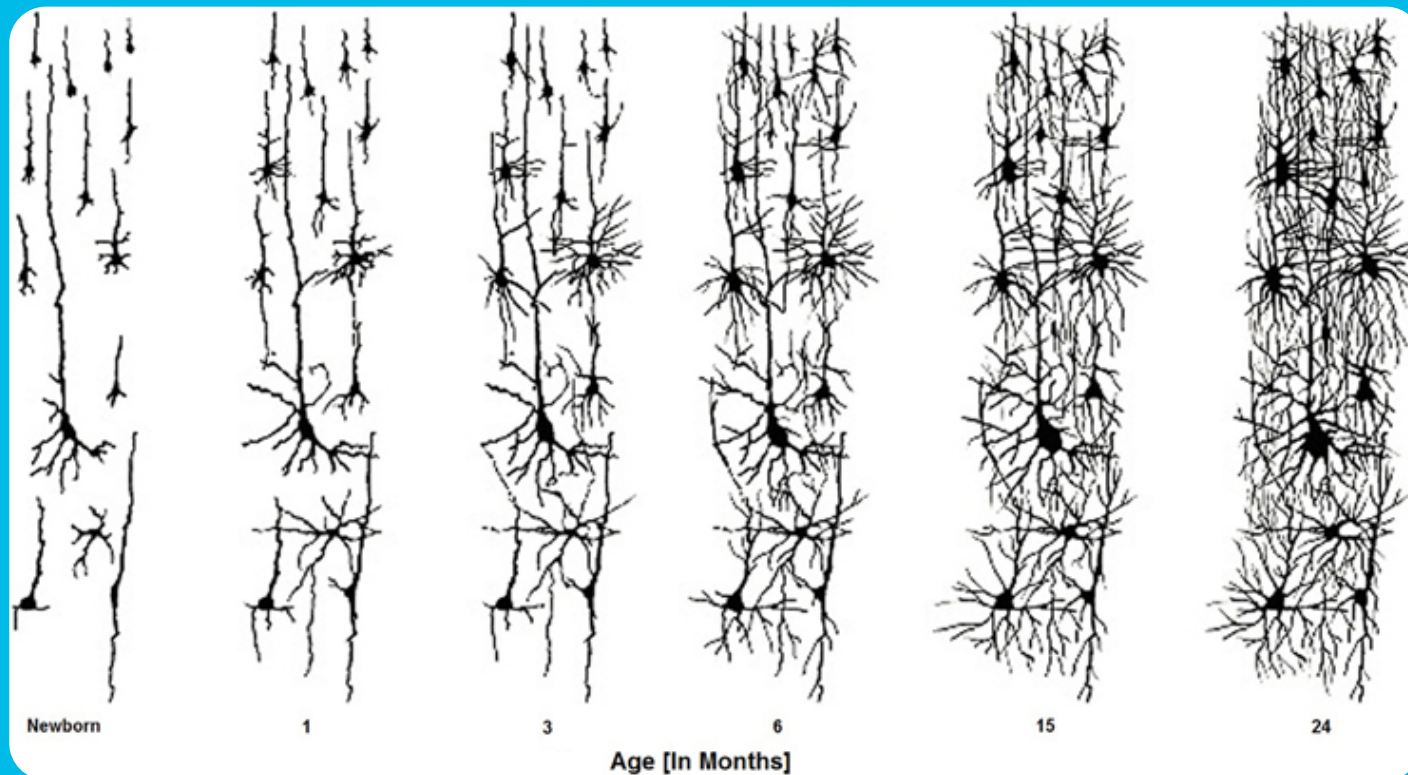
Choice signals storage
from working memory to
long term memory

Wired for Curiosity: Why learning feels so good



Child-Directed

New learning that **CONNECTS** to prior experience facilitates neural pathway growth



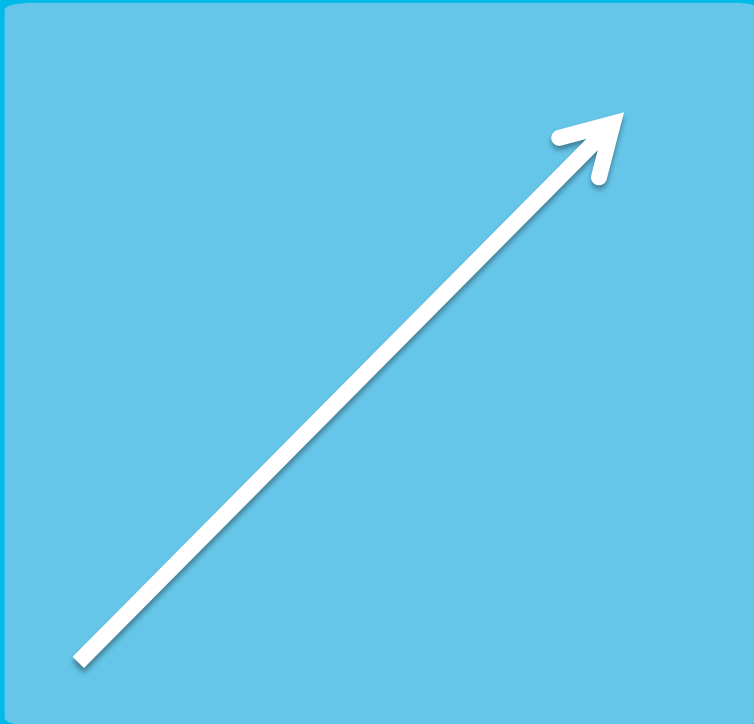


Features of Risk-Friendly Environments

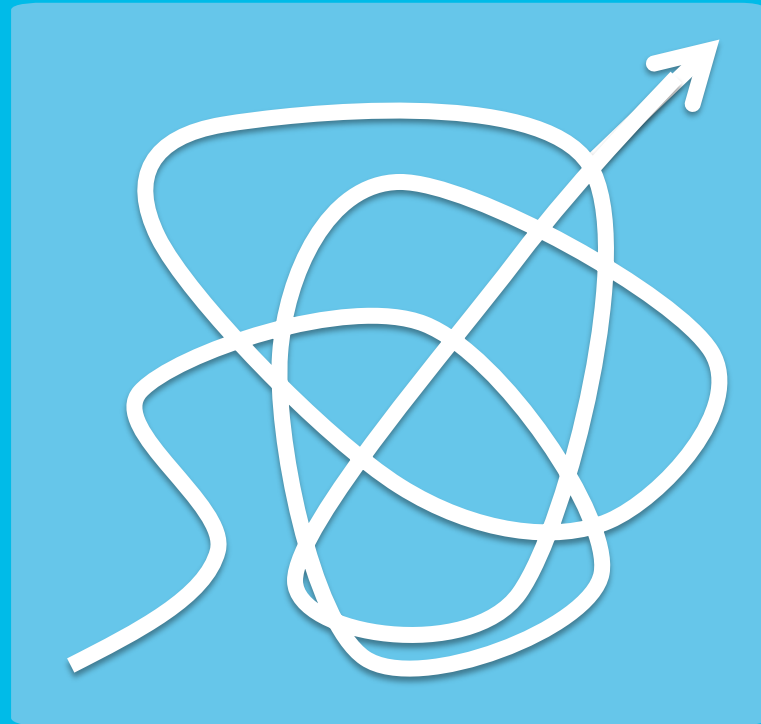


- Trying new things
- Challenge is encouraged
- Build resilience and persistence

Success

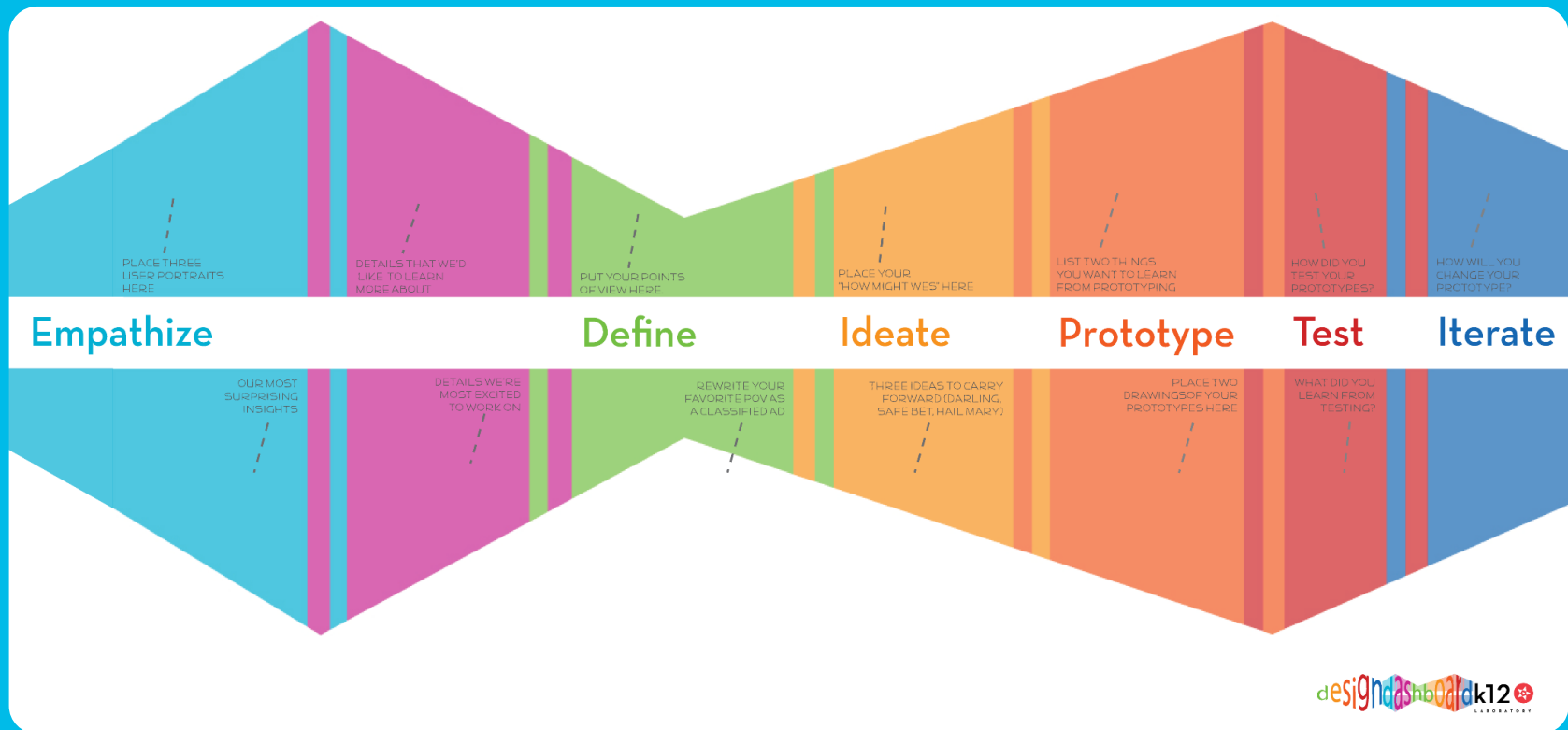


Fictional path to success

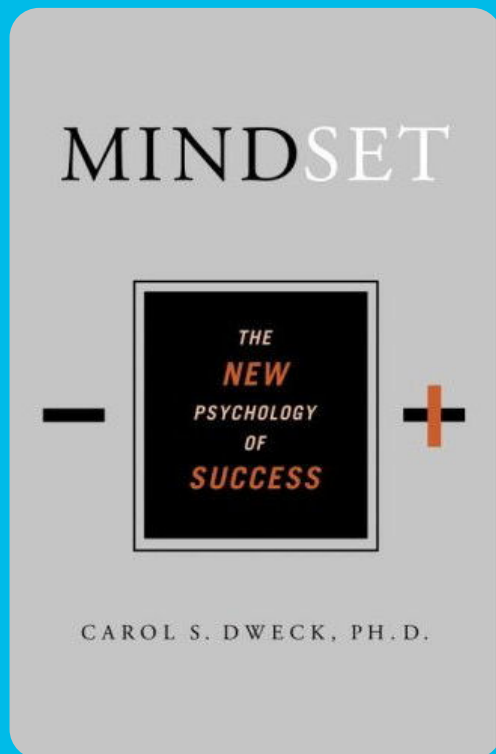


Actual path to success

Risk Friendly Key Concept: Design Thinking



Risk Friendly Key Concept: Growth Mindset





E motionally attuned

Features of Emotionally Attuned Learning



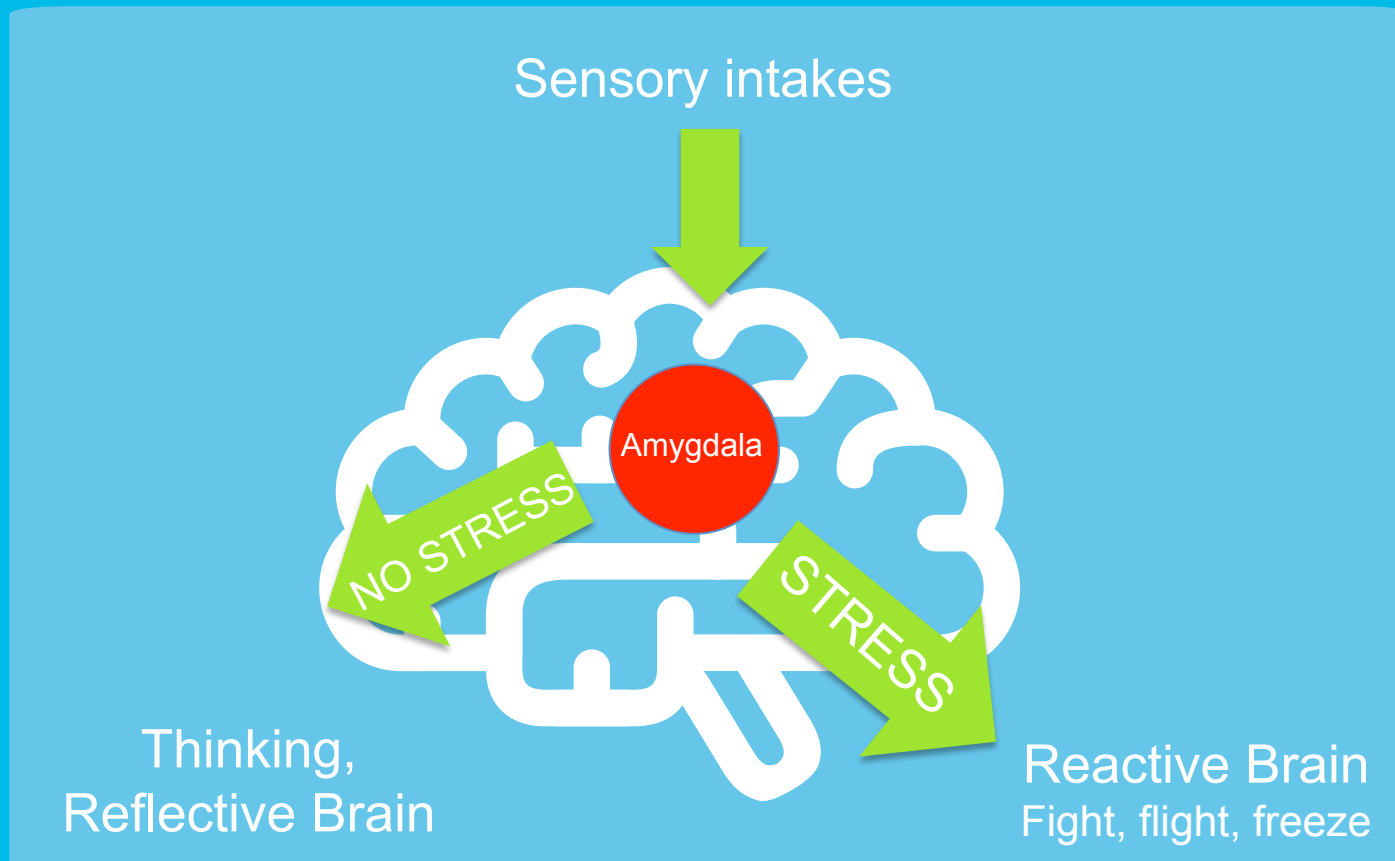
Research shows:

- Positive emotions increase creativity and learning

How to apply it:

- Mind feelings to build the mind

Emotionally Attuned: The Amygdala as a Gateway to Learning





A ctive

Features of Active Learning



- Physical
- Participatory
- Playful

How to Apply it: Brain Breaks

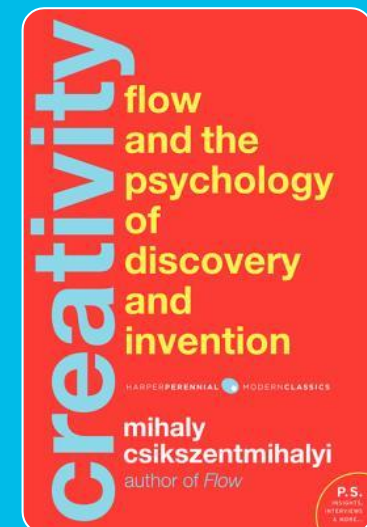
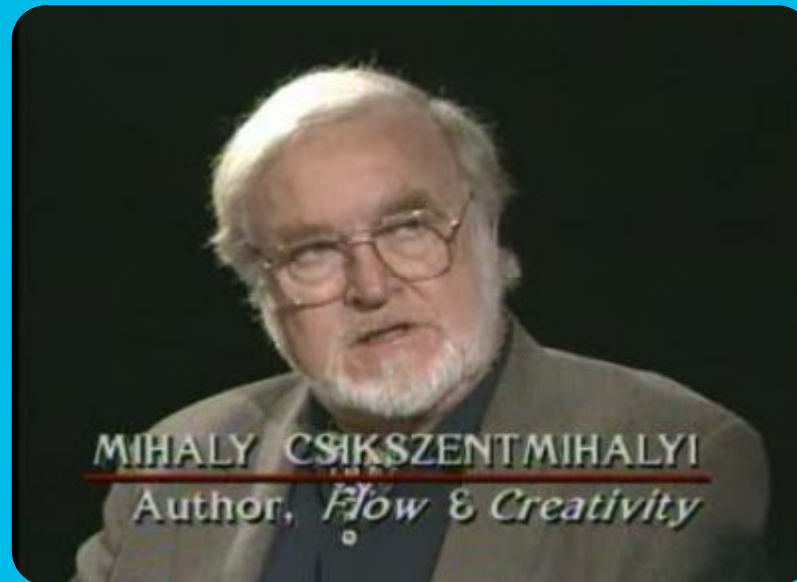
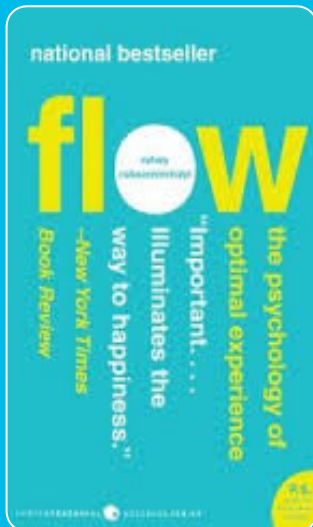
Short physically active breaks help to enhance children's concentration and perseverance





Time flexible

Features of Time Flexible Learning: FLOW and Deep Learning



Features of Time Flexible Learning: FLOW and Deep Learning



“You know that what you need to do is possible to do, even though difficult, and sense of time disappears. You forget yourself. You feel part of something larger.”

A photograph of a child looking up at a petri dish held by an adult. The image is dark and moody, with the child's face in the foreground and the petri dish in the background. The text 'Exploratory' is overlaid on the image.

E exploratory

Features of Exploratory Learning



- Open-ended
- Divergent Thinking
- Metacognition

Closed-Ended and Open-Ended Questions

$$5 + 5 = ?$$

Convergent Thinking

What two
numbers
combine to
make ten?

Divergent Thinking

Powerful Phrases

I wonder ...

I notice ...

Tell me more...



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Child-Directed: Give choice and follow curiosity.

Risk Friendly: Celebrate effort, process and failure.

Emotionally Attuned: Mind feelings to build the mind.

Active: Play! Move! Engage all the senses.

Time Flexible: Help children learn to flow.

Exploratory: Ask and encourage open-ended questions.

Questions?

Considerations for Programming in Libraries



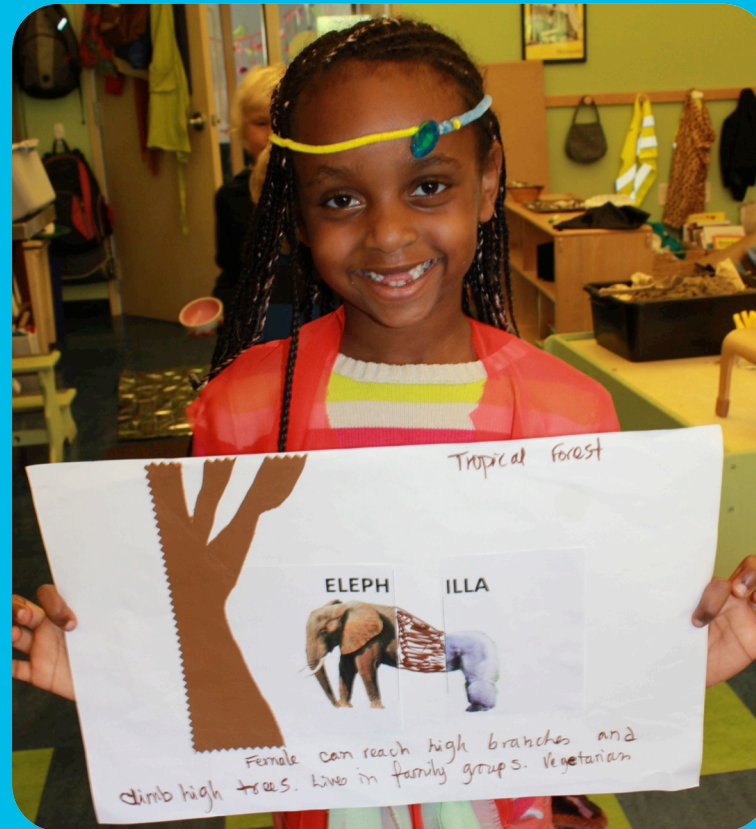
- Space and volume constraints
- Staffing constraints
- Budgetary constraints
- Attendance at drop-in programs can be unpredictable, timing is inexact and ages vary
- Activities should not feel like school

How Can We Incorporate These Lessons into Library Programs?



- Emphasize the learning process over the end product
- Shift language to open-ended prompts
- Choose activities for playfulness and tinkerability. Ask yourself if the activities you offer allow children to choose, be curious and lead.

Activity: Animal Remix



Activity: Finish the Drawing



Activity: A-Maze-ing Design



Activity: Ice Exploration



Resources: Register Now for Training

Building Blocks of Creative Thinking

2-Day Training Immersion

September 24 & 25, 2015

Sausalito, CA

Discounted Library Educator Rate: \$115

Space is limited!

Cami Gordon: (415) 339-3963 or cgordon@badm.org

CenterforChildhoodCreativity.org/PD



facebook.com/CenterforChildhoodCreativity



[@C4Creativity](https://twitter.com/C4Creativity)

Resources: Research Available Now



The Center for Childhood Creativity

Launched in 2011 as the research and advisory division of the Bay Area Discovery Museum, the Center for Childhood Creativity (CCC) works at a national scale to advocate for the critical importance of creativity development in childhood and to inspire the next generation of innovators, thought leaders and problem-solvers.

CCC is committed to advancing the research that informs our understanding of childhood creativity and its cultivation. High-quality empirical research provides the foundation for all of CCC's work, including advising to schools, museums and other non-profits, as well as companies that directly influence children's development.

Through its Creative Thinking Research Lab, CCC partners with researchers from Stanford University, University of California at Berkeley, Mills College and University of Washington, among others, to investigate a wide range of topics related to creative thinking in children, including language acquisition, causal reasoning and the role of social relationships in children's learning. In response to the growing demand for access to the Museum's diverse and young audience, CCC launched the Distance Research Project in early 2015 to allow researchers from across the country to partner with CCC to collect data at the Museum.

CCC authors white papers that summarize key academic studies and provide new insights into creativity development. Most recently, CCC released *Inspiring a Generation to Create: Critical Components of Creativity in Children*, which synthesizes more than 150 studies from various academic fields contributing to our understanding of creativity and finds that environment and experience determine our creativity potential. The paper establishes a bold new framework of seven key skills associated with creativity and provides practical tips and sample activities to promote the skills.

For more information, to engage with CCC as an advisory partner and to download white papers, visit: CenterforChildhoodCreativity.org.

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Pa Brainerd
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researcher and founder, National Institute
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Founder of CDC Center for Youth Violence
Prevention and Injury
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Sociologist, happiness expert and Director of
the U.C. Berkeley Greater Good Science
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University of Oregon

CenterforChildhoodCreativity.org | inquiry@centerforchildhoodcreativity.org | 557 McHenry Rd. Sausalito, CA 94965 | 415-339-3820

A Framework for Designing Learning Environments to Promote Creativity

C³

CHILD
DESIGNED

Research shows: When children initiate learning, they engage more deeply and create connections between the material and their previous knowledge and experiences.
How to apply it: Providing time for children to take ownership of their learning and make decisions promotes creative exploration and the development of higher level thinking skills.

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POSITIVE

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EXPLORE

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The acronym **CREATE** illustrates key elements of learning environments that support the development of creativity for children aged 2-10.
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Inspiring a Generation to Create:

Critical Components of Creativity in Children



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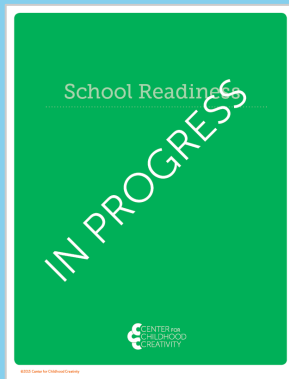
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Resources: Research Coming Soon

CenterforChildhoodCreativity.org



- Library Educator Resource Kit
- School Readiness Research Paper



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Resources: Grants

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ALSC grants fund creativity programming in public libraries. Your library could be one of 77 lucky recipients of a \$7,500 grant to encourage creativity for children ages 6-14.

Application Deadline: Friday, September 25, 2015

Questions? Contact ALSC

Ala.org/alsc/curiositycreates



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Thank you!

Questions?



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