The Pedagogy *of* Early Learning

A STATE OF THE FIELD RESEARCH BRIEF

CCNETWORK Content Center
Early Learning Success

April 2026

AUTHORS AND AFFILIATIONS

Center on Early Learning Success (CELS):

Laura Bornfreund, M.P.A., Bornfreund Education

Rosemarie Allen, Ph.D., Arizona State University and IREE

Wendy Machalicek, Ph.D., BCBA-D, University of Oregon

Lisa Gordon, Arizona State University

Eric Bucher, Ed.D., Arizona State University

CITATION

Bornfreund, L., Allen, A., Machalicek, W., Gordon, L., & Bucher, E. (2026). The pedagogy of early learning: A state of the field research brief. The Center on Early Learning Success at Arizona State University. https://www.celscenter.org/resources/pedagogy-of-early-learning-research-brief

ABOUT THE CENTER ON EARLY LEARNING SUCCESS

The Center on Early Learning Success (CELS) is a National Technical Assistance Center in the Comprehensive Centers Network that supports regional, state, and local educational agencies to strengthen systems and advance learning across the preschool to Grade 3 (PK–3) continuum. CELS is operated by the Arizona State University (AS in partnership with the Buffett Early Childhood Institute at University of Nebraska (NU); the Center X Mathematics Project at the University of California, Los Angeles (UCLA); the California Reading & Literature Project (CRLP) at the University of California, San Diego; New America; and the Department of Special Education at the University of Oregon (UO).

The contents of this brief were developed under a grant from the U.S. Department of Education (Department). The Department does not mandate or prescribe practices, models, or other activities described or discussed in this document. The contents of this brief may contain examples of, adaptations of, and links to resources created and maintained by another public or private organization. The Department does not control or guarantee the accuracy, relevance, timeliness, or completeness of this outside information. The content of this brief does not necessarily represent the policy of the Department. This publication is not intended to represent the views or policy of or be an endorsement of any views expressed, or materials provided by any Federal agency.

Table of Contents

Definitions

Direct instruction is a structured, teacher-led approach to teaching in which the educator explicitly presents and models specific skills, concepts, or information to students. Direct instruction is a necessary and valuable component of early learning pedagogy, particularly for introducing new concepts, teaching foundational literacy and numeracy skills, and ensuring all children have access to essential content. However, direct instruction alone is insufficient as the primary mode of teaching in the early grades. When it dominates the instructional day at the expense of play-based, inquiry-driven, and child-directed learning, it limits opportunities for children to construct understanding, develop executive function, build social and emotional skills, and develop the curiosity and agency that sustain lifelong learning. Effective early learning pedagogy uses direct instruction strategically and in balance with guided play, collaborative learning, and open-ended exploration.

Early grades means preschool through Grade 3, including children ages 4 through 8. Throughout this brief, the literature and programs referenced may use the terms early grades, early childhood education, and early learning to refer to children's experiences across the preschool to Grade 3 (PK-3) continuum.

Guided play is adult-supported inquiry and guidance focused on learning goals while preserving child agency and choice. It is an effective bridge between free play and direct instruction.

Pedagogy refers to the practice of teaching, including the methods and strategies used to facilitate learning based on the child's needs, strengths, interests, and lived experiences; the design of the classroom environment and materials; and intentional and responsive teacher-child relationships and interactions.

Play-based learning is an approach to teaching and learning where play serves as the primary vehicle for children's development and building knowledge and skills. It includes free play, guided play, and structured games that help children explore and understand new ideas and concepts across content areas such as language and literacy, mathematics, science, and social studies.

At-A-Glance Summary

Introduction

The quality of students' experiences across the preschool to Grade 3 (PK–3) continuum creates a strong foundation for student lifelong learning and family success.[1] Walk into a high-quality PK-3 classroom, and for example, children may be building, communicating, laughing, wondering, and creating.[2] Teachers will often be observing, questioning, documenting children's learning, and interacting with children at eye level.[3,4] Learning is happening everywhere all at once; it does not resemble the worksheet-and-didactic teacher-led instructional model that has crept into far too many early grade environments.[5]

The evidence base for high-quality early childhood education is deep, consistent, and long-standing. The problem is not a lack of research. The problem is that research does not always reliably reach classrooms, schools, homes, or policy decisions in time to matter for the children currently in these settings.

The goal of this research brief is to ground the field with a shared understanding of the pedagogy of early learning across the PK–3 continuum, with a particular focus on the importance of play-based learning across grade levels. This brief synthesizes the state of the field and is intended for state and local education agencies (SEAs and LEAs), education administrators and leaders, practitioners such as teachers, and parents who together set the conditions for how young children learn. This brief explores the research base for pedagogy across the PK–3 continuum and offers bright spots at the state and local levels. While this brief does not cover specific pedagogy for core academic domains, early childhood pedagogy is applicable across all content areas and can be built on with specific instructional strategies and approaches unique to each core academic domain, like early literacy or early math.

In this series of State of the Field research briefs from the Center on Early Learning Success (CELS), we challenge readers to consider what could be possible if early learning across the PK–3 continuum was more clearly and consistently aligned to support effective teaching and learning environments for students and to set a positive trajectory for life.

Research

The first eight years of life are a period of extraordinary neurological development.[6] Research from the science of learning and development demonstrates that children's brains are wired and built through early experiences and relationships, with executive function skills—working memory, inhibitory and emotional control, and cognitive flexibility—developing rapidly during PK-3.[7] **The brain's architecture is shaped by consistent and responsive interactions, particularly the back-and-forth exchanges between children and caring adults called serve-and-return interactions**.[8]

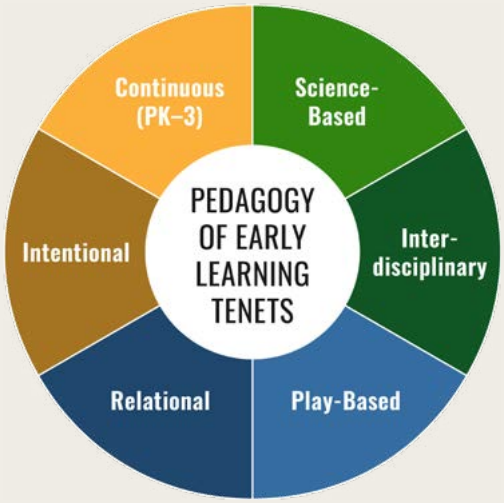
Effective practices in the early grades align intentional, play-based learning through open-ended materials and environments with practices that meet each child's needs, strengths, and culture. **Research consistently finds that play is not a break from learning—it is the primary vehicle for learning in early childhood.**[9]

Despite this evidence, early elementary classrooms have shifted markedly toward passive, compliance-oriented instruction over the past 25 years.[10] Between 1998 and 2010, kindergarten classrooms with dramatic play areas decreased by 29% while daily worksheet use increased by 17%.[11] The 2024 National Assessment of Educational Progress (NAEP) data indicate a reading and math crisis rooted in challenges in the early grades and point to the need to increase support, strengthen proficiency, and accelerate learning for all students.[12] Only 31% of Grade 4 students nationwide read at or above proficiency—a figure that has remained persistently low and worsened during the pandemic.[13] These results underscore an urgent challenge of persistent and widespread academic underperformance with gaps emerging early and compounding over time. This signals that the narrow skills-drill approach is not delivering the outcomes it promises, and thus a different approach is needed.

Key Takeaways[14] from Research and Bright Spots

- **Play is central to children's learning across the PK-3 continuum.** Children engaged in high-quality imaginative play demonstrate stronger vocabulary and narrative comprehension. Play-based environments produce equivalent or better academic outcomes compared to direct-instruction-only approaches, with additional advantages in creativity, self-reflection, and motivation.
- **Guided play is the middle ground.** Guided play outperforms free play and direct instruction alone for targeted learning outcomes, including early math, shape knowledge, and spatial vocabulary..
- **Academic pressure is squeezing the joy out of learning.** Children in highly structured, direct-instruction-only classrooms show short-term reading gains that largely disappear in later grades while showing increased behavioral problems, lower academic motivation, and decreased enthusiasm for school compared to peers who experienced play-based learning.
- **Developmental domains are intertwined.** Effective early learning pedagogy addresses language and literacy, executive function, emotional regulation, social skills, math and science, physical development, and the creative arts in an integrated way when possible. Overly isolating academic skills—such as isolated phonics drills and rote math computation—while ignoring other domains can undermine learning across the board.
- **States and local education agencies (LEAs) can take action to protect play-based learning.** Some states have enacted laws or implemented strategies to encourage play-based instruction from Pre-K through the early grades.

- **Implementation barriers must be addressed.** Key obstacles to adopting early learning pedagogy in the early grades include disconnects in curriculum, pedagogy, standards, expectations, and assessments between preschool and K–3; the absence of a shared, measurable definition of guided play–based learning; narrow assessment systems that disregard children's learning through play; and insufficient professional preparation for educators to align their practice with the latest science of learning.



Science-Based

The science of learning and development is the base for all teaching practices.

Interdisciplinary

Domains of learning and development are inextricably linked.

Play-Based

Play is the primary vehicle for student learning.

Relational

Relationships facilitate learning.

Intentional

Rigor is reflected in teaching that purposefully weaves together play, responsiveness, and flexibility to advance student learning.

Continuous (PK–3)

Early learning must be aligned and continuous from preschool through Grade 3.

RECOMMENDATIONS

Below is a condensed list of actions for state and local education leaders, educators, and families.

STATE AND LOCAL EDUCATION LEADERS

- Provide guidance and resources for play-based teaching and learning that can be embraced and adopted by each grade level across the PK-3 continuum.
- Set curricular expectations that infuse play and flexibility into state standards.
- Support and incentivize professional development offerings, mentoring, and coaching for PK-3 teachers focused on play-based learning.

EDUCATORS

- Incorporate guided play as a foundational instructional strategy into lesson plans, curriculum activities, and daily classroom routines.
- Prioritize active student engagement through play throughout the day.
- Use authentic, reliable and valid assessments that capture the full range of how children learn.
- Inform parents and other family members about the importance of play-based learning and incorporate the school context and family cultures into the materials, environments, and activities.

PARENTS AND FAMILIES

- Ask how you can extend school activities at home for continuity.
- Play with your child while following their lead, and include plenty of time for unstructured play that is unscheduled and screen-free.

The Pedagogy of Early Learning

Research Brief

Introduction

The quality of students' experiences across the preschool to Grade 3 (PK–3) continuum creates a strong foundation for student lifelong learning and family success.[15] Walk into a high-quality early learning classroom, and you will know it immediately by the joyous, happy, and engaged experiences unfolding.[16] Children are engaged, purposeful, and focused in activities like building, communicating, wondering, and creating. The teacher is observing, questioning, extending thinking, and often kneeling down to interact with students at eye level.[17] Learning is happening everywhere all at once; it does not resemble the worksheet-and-didactic teacher-led instructional model that has crept into far too many early grade environments.[18]

The contrast between what early learning can look like and what it usually looks like is why this research brief is important. The evidence base for high-quality early childhood education is deep, consistent, and long-standing. Decades of research demonstrates what conditions help young students thrive academically and later in life. The challenge is not a lack of research. The problem is that research does not always make it into classrooms, schools, homes, or policy decisions in time to really matter for the children experiencing it right now.

This brief explores the research base for early childhood education pedagogy with a focus on play-based learning as the context for developmentally informed instruction; and offers bright spots at the state and local levels. While this brief does not cover specific pedagogy for core academic domains, the approach to early childhood pedagogy is applicable across content areas. This brief is intended to support state and local decision makers who set the conditions for preschool through Grade 3; state and local agencies and administrators who shape pedagogical culture and professional development of the adults working directly with students; classroom educators who make hundreds of instructional and environmental decisions every day; and parents and families who are the primary influencers of their child's learning and development.

Background

Young students are naturally curious and eager to make sense of the world around them.[19] They learn best through active exploration and play, social interaction, and experiences that connect new ideas to what they already know.[20] Decades of research based on the science of learning consistently show children construct knowledge and understanding when they are actively engaged and allowed to move, converse, and actively interact in the environment.[21] Yet, over the last 25 years, early elementary classrooms have increasingly relied on instructional practices that do not best meet these needs—extended periods of seatwork, isolated skills drills, and worksheet-heavy practice.[22]

The gap between research on how students learn best and classroom practices is wide and growing in many schools. Far too many children in kindergarten and the early elementary grades, and increasingly in some preschool programs, have their day dominated by sitting and listening. As Golinkoff and Hirsh-Pasek (2016) argue, schools overemphasize teaching facts while underemphasizing how to learn, think deeply, and make connections.[23]

According to the national Early Childhood Longitudinal Study (ECLS-K), between 1998 and 2010, the number of kindergarten teachers reporting the presence of dramatic play areas in their classrooms decreased by 29%, while daily worksheet use increased by 17%.[24] In part, these shifts stem from Congress's passage of the No Child Left Behind Act in 2002.[25] The law tied school performance to standardized test scores in reading and math beginning in Grade 3 and required states to create systems to measure school accountability.

The law also prompted states and districts receiving Reading First funding to enact reading blocks, often 90 to 120 minutes per day.[26] These focused heavily on constrained skills such as letter recognition, phonics drills, and other prerequisite literacy skills in the early grades. While the science conclusively shows that phonics are critical to early literacy, data show what we are implementing is not working for most children, with only 31% of fourth graders reading proficiently.[27] Math instruction is frequently basic and repetitive, missing opportunities for reasoning, problem-solving, and mathematical talk.[28] Children in K-3 classrooms receive as little as 18 minutes of science instruction per day,[29] and social studies, the arts, and physical education are similarly squeezed. In schools serving children who need the most support, these patterns are especially pronounced. Children in under-resourced schools experience an overemphasis on isolated skill work and have fewer opportunities for the kind of integrated, inquiry-driven learning that builds content knowledge, vocabulary, critical thinking, and a genuine love of learning.[30]

The loss of instruction and learning environments guided by early learning pedagogy has also come at a cost to children's overall development.[31] Young students are still learning to manage their emotions, build relationships, and navigate structured environments. These capacities are not only foundational and often, pre-requisites for students' school success but also for their lifelong well-being. School environments dominated by passive, compliance-oriented instruction with few opportunities for student talk and choice offer limited opportunities for developing self-regulation, collaboration, confidence, and agency.[32]

Critically, the narrow focus on constrained skills has not led to the desired academic outcomes. Results from the 2024 National Assessment of Educational Progress (NAEP), known as the Nation's Report Card, underscore an urgent challenge: persistent and widespread reading and math underperformance with gaps emerging early and compounding over time.[33] Only 31% of fourth graders nationwide read above proficiency on the NAEP. This figure has remained low for decades and worsened during the COVID-19 pandemic. These data point to the need for a different approach. They point to the need for stronger early literacy and numeracy foundations for all children

built through richer, more engaging instruction that advances learning rather than constrains it. This includes ensuring learning in Pre-K and kindergarten through third grade is rigorous, joyful, and playful.

Compounding these pedagogical and instructional challenges are the fragmented and uneven systems that govern PK-3. Children entering kindergarten may have attended public school Pre-K, Head Start, state-funded preschool, or private child care—each of which can be governed by different funding streams, quality standards, and accountability systems.[34] This array of options means children's experiences vary significantly based on geography, income, and program type. Indeed, some children enter kindergarten without any prior school or group child care experiences. Additionally, coordinating coherent pedagogical approaches across the PK-3 continuum is challenging. At the school level, principals and other instructional administrators often lack specialized knowledge of early learning, leading to instructional frameworks designed for older students being used in Kindergarten through Grade 3 classrooms.[35] At the state level, curriculum adoption policies, literacy and math laws, and assessment policies send mixed signals to teachers and schools about what constitutes good pedagogy.

There are signs of promise and meaningful shifts in a different direction. Recent action in some states and school districts, discussed in this brief, reflects a growing interest in ensuring instruction that aligns with the science of early learning and development, including instruction that centers on guided play.

Every good pedagogical decision across the PK-3 continuum flows from an understanding of the science of learning and development.

Research

Every good pedagogical decision across the PK-3 continuum flows from an understanding of the science of learning and development—which are the child development foundations and neuroscience that shows how students learn best.[36] The first eight years of life are a period of extraordinary development. The number of connections young children form between brain cells peaks around age three, and continues to change through middle childhood.[37] The brain wires and rewires itself based on children's relationships and experiences. The regions of the brain managing language, emotional regulation, executive function, and sensory processing are all actively and significantly developing during these years. During the early childhood years, working memory, inhibitory control, and cognitive flexibility—the components of executive functioning—develop rapidly,[38] and pretend play in particular is thought to enhance these functions.[39]

The back-and-forth exchanges between a child and an adult, coined serve-and-return interactions by the Harvard Center on the Developing Child, are how the brain builds its architecture for learning, behavior, and health.[40] A classroom where a teacher talks *at* children rather than *with* them, where questions are rhetorical rather than genuine, where children's ideas are dismissed rather than explored, is a classroom working against optimal brain development. **Early learning pedagogy aligns intentional, play-based learning within rich, accessible, open-ended environments with practices that meet the child's needs, interests, strengths, age, developmental status, and cultural background.**[41] Teachers support the development of secure and positive relationships between children, their peers, and adults in the classroom and build relationships with the child's family to support the child's development.[42]

HOW CHILDREN LEARN

Interdisciplinary

The domains of child development and learning are not separate silos, they are inextricably linked.[43] A child's language development is intertwined with their social and emotional growth; their physical development shapes their capacity to focus and regulate behavior; their mathematical thinking is deepened through storytelling, block building, and dramatic play. This integration extends across content areas as well. Science and mathematics reinforce each other. Children who engage in scientific inquiry develop measurement, data, and reasoning skills that deepen mathematical understanding, while mathematical thinking sharpens scientific problem-solving.[44] Science and social studies, in turn, are powerful vehicles for building the vocabulary, background knowledge, and comprehension skills that are foundational to literacy.[45] Children who explore how plants grow, how communities work, or how weather changes are simultaneously building the content knowledge and language that make complex texts accessible in later grades. Effective early learning pedagogy does not treat literacy as separate from science, or social and emotional learning as separate from academic content. Instead, it recognizes that young children learn across domains simultaneously and that instruction designed to address multiple domains at once is both based on *how* young children learn and *more effective* than instruction that isolates discrete skills.[46]

Relational

Relationships are not a backdrop to learning in the early grades, they are the mechanism through which learning happens. Research on the science of learning and development consistently shows that children learn best in the context of secure, responsive, and trusting relationships with adults and peers.[47] When teachers know their students well, respond to their interests and needs, and create classroom environments where children feel safe to take risks and make mistakes, the conditions for deep learning are established. Conversely, classrooms where relationships are thin, interactions are primarily corrective, and children feel anxious or unseen are classrooms working against optimal development.

Intentional Instruction

Effective early learning teaching is both purposeful and responsive and addresses the whole child.[48] **In this approach, rigor is reflected in teaching that purposefully weaves together play, responsiveness, and flexibility to advance learning.** This reframes rigor not as skills taught in isolation, but as the intentional design of learning experiences that engage children meaningfully and support their development across domains.

Intentional instruction addresses the full range of children's development. This means attending not only to academic skill development in literacy and mathematics, but equally to children's social and emotional development, physical health and movement, creative expression, and sense of identity and belonging.[49] A child who is hungry, tired, anxious, or socially isolated cannot fully access instruction regardless of its quality. Intentional instruction acknowledges that these dimensions of development are prerequisites for, not distractions from, academic learning.

It also requires designing learning experiences that build knowledge and skills across domains simultaneously. Rather than isolating discrete skills, educators use approaches such as play, exploration, and integrated learning experiences to support language, cognition, social interaction, and self-regulation together. Instructional decisions about scheduling, environment, materials, and grouping are made with the full developmental picture of each child in mind, not only their performance on discrete academic measures, ensuring that learning is both meaningful and connected.

The Role of Play in Early Learning

Few things in early education generate as much debate as play, especially in grades K–3.[50] Somewhere along the way, the idea that play and learning are incompatible or in competition took hold. The science of early learning and development tells us this is not true. **In fact, for young students, play is not a break from learning. It is the primary vehicle for learning.**

The evidence for play is strong:

- Play fosters social, emotional, physical, cognitive, and creative skills more so than[51] traditional direct instruction in the primary classroom.[52]
- Children engaged in high-quality imaginative play demonstrate stronger vocabulary, narrative comprehension, and theory of mind than matched peers in low-play conditions.[53]
- Play-based learning environments produce equivalent or superior academic outcomes compared to direct-instruction-only approaches, with additional advantages in creativity, self-regulation, and motivation.[54]
- Children in highly structured, academic kindergartens show short-term reading gains that largely disappear in the later primary grades,[55] while showing increased behavioral problems, lower academic motivation, and decreased enthusiasm for school compared to play-based peers.[56]

Play is not a single construct, but rather there are many types of play experiences along a spectrum, including free play (e.g., children have freedom to engage and discover with minimal constraints) and guided play (e.g., adults provide structure to support specific learning goals with children).[57] Across this spectrum, children may engage in a variety of play types (see **Figure 1**) such as:

- Sociodramatic and imaginative play with dress-up clothes, puppets, and props, which supports children's narrative thinking, perspective taking, and social competence.[58]
- Construction play with blocks and loose parts like buttons or container lids, which promotes spatial reasoning, creativity, persistence, and mathematical and literacy concepts.[59]
- Exploratory and sensory play with items like sand and water, natural materials, and play-dough, which builds skills such as hypothesis testing, scientific reasoning, and vocabulary.[60]

Guided Play as a Middle Ground Between Free Play and Direct Instruction

Play-based learning is theoretically grounded in the understanding that young children who are engaged in play experience heightened motivation to learn.[61] In addition, when adults mindfully guide children's play to address a targeted outcome, enhanced scaffolding of development and learning can occur.[62] A primary factor in achieving learning outcomes in play-based learning is the guidance provided by an intentional teacher. In guided play, teachers follow children's intrinsic motivation to learn and follow their lead to scaffold and extend learning. Teachers do this by asking open-ended questions, modeling problem solving, and reinforcing the child's thoughts and ideas.[63] Skene and colleagues (2022) call guided play "the middle ground between free play and direct instruction", which is an appealing solution to the tensions between academic outcomes and practices aligned with the science of early learning and development that professionals face in early childhood education environments.[64] Evidence suggests guided play could be key to achieving learning outcomes. A recent research review reported positive outcomes associated with guided play-based learning when compared to direct instruction, including early math skills, shape knowledge, and task switching.[65] Further, researchers examining studies comparing guided discovery-based learning (i.e., independent exploration) to direct instruction in a meta-analysis of 360 studies found that enhanced discovery in which educators provided feedback to children, scaffolded, and elicited explanations benefited learners.[66]

FIGURE 1: TYPES OF PLAY AND HOW IT SUPPORTS STUDENT LEARNING

Play Type	How it Supports Student Learning
Sociodramatic / Imaginative Play	Language development; narrative thinking; perspective-taking; emotion regulation; abstract reasoning; social competence (e.g., Lillard et al., 2013; Nicolopoulou et al., 2015; Smits-van der Nat, 2024)
Construction Play (blocks, loose parts)	Spatial reasoning; mathematical and literacy concepts; problem-solving; creativity; persistence; cause-and-effect thinking; convergent and divergent thinking (e.g., Cankaya et al., 2025; Verdine et al., 2014)
Outdoor / Physical Play	Gross motor development; risk tolerance; spatial awareness; executive function; stress regulation; on task behavior (e.g., Brussoni et al., 2015; Lundy et al., 2021; Sandseter & Kennair, 2011)
Game Play (with rules)	Executive function; turn-taking; number concepts; strategic thinking (e.g., Diamond, 2013)
Exploratory Play (science, sensory)	Curiosity; hypothesis testing; vocabulary; scientific reasoning (e.g., Bonawitz et al., 2012; Neuman & Dwyer, 2009; Nicolopoulou et al. 2015)
Guided Play	Adult-supported inquiry while preserving child agency and choice; an effective bridge between free play and direct instruction (e.g., Weisber et al., 2016)

Technology and Play-Based Learning

The prevalence of digital devices and online games have changed both classroom-based and home-based learning.[67] The COVID-19 pandemic further heightened attention to the role of technology and digital devices in young children's learning and development.[68] The reality is children may be exposed to technology in their daily lives, and there are important cautions that parents and educators can take to ensure healthy development.

- Despite the growing availability of and positive findings for online games,[69] not all games are equally effective. Just as with hands-on games, adults should carefully select educational digital games according to:
  - Targeted learning objectives
  - The age and developmental appropriateness of games, including recommended limits on screen time based on age
  - Documented outcomes of the online game

- Adults should:
  - Develop plans for digital play that limit screen time and promote other learning activities, including free play and guided play with hands-on materials, outdoor play, and teacher-directed instruction
  - Actively supervise and cooperatively guide children during these activities to ensure learning outcomes are achieved, and children learn safe online behavior appropriate to their age. This often requires multiple adults.
  - Monitor the progress of children on targeted learning outcomes and make changes as needed, including shifting to more hands-on play-based activities
  - Plan for and assess the generalization of skills to everyday situations

IMPLEMENTATION BARRIERS

As with any form of pedagogy or instruction, what actually happens in classrooms varies widely and depends on the skills and knowledge of the educators and the supports they receive. In their Learning to Play Framework for policy and practice, Parker and colleagues (2022) identified several challenges to teacher implementation of playful learning in primary classrooms:[70]

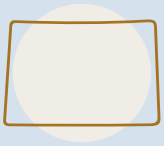
1. Distinct pedagogical approaches and differences in instructional practices between preschool and primary grades has resulted in uneven uptake of play-based learning. There has been increased pressure to provide more direct academic instruction in preschools, and calls to ready primary grades for young children and requisite developmentally appropriate play. The research-to-practice rift is widened by the relative dearth of applied research on play-based learning in primary grades rather than preschool.[71]
2. No simple definition for play-based learning, which can encompass the spectrum from child-directed free play to structured adult-led activities. Without a shared definition, measuring implementation fidelity is difficult, as is sustaining policy change.
3. A lack of a cohesive, agreed upon framework that straddles PK-3 learning contexts and creates shared understanding across educators and policymakers.

For young students, play is not a break from learning. It is the primary vehicle for learning.

Bright Spots

SEAs, LEAs, and school administrators across the nation are working to innovate in play-based learning in several ways, including enacting legislation and launching state and local initiatives.

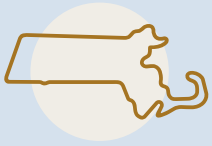
STATE INITIATIVES: CURRICULUM IN THE EARLY GRADES



Expanding Ideal Learning Environments in Colorado

Early Milestones Colorado partnered with Trust for Learning to expand ideal learning environments through a grant called Ideal Learning Environments in Pre-K through Kindergarten. Grantees were required to demonstrate play-based learning, positive relationships, and strength-based approaches. In 2022, six grantees were funded to expand ideal learning environments throughout Colorado with a focus on principles such as "The teacher is a guide, nurturing presence, and co-constructor of knowledge" and "instruction is personalized to acknowledge each child's unique development and abilities".[72]

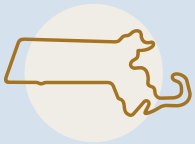
Eagleton Elementary School in Denver adopted the Tools of Mind (Tools) curriculum[73] to build social and emotional skills and enhance academic outcomes through play. Tools uses a variety of activities and materials to enhance skills in all developmental domains. Activities are designed to encourage children to engage with minimal teacher facilitation or direction. Large group, small group, individual, and paired activities promote peer cooperation and support, collectivism rather than competition, and embedded self-regulation activities to increase pro-social behaviors.[74] Initial anecdotal reports show that teachers trained on Tools reported a greater understanding of the children's unique strengths, their needs, and how to prepare the environment to scaffold learning. Teachers also reported feeling better prepared to support children as they returned to school post-pandemic, using play-based learning to address trauma, anxiety, and socialization needs.[75]



Implementing Playful Curriculum and Learning Practices

Boston Public Schools is a compelling example of what it looks like to extend the science of early learning and development and play-based practices beyond Pre-K into the early elementary grades. After years of implementing a strong Pre-K program, the district's Department of Early Childhood (DEC) , under the direction of Jason Sachs, realized that to sustain children's Pre-K gains, it needed to make changes in the grades that follow. DEC developed an aligned curriculum (Focus) that deliberately brings the instructional pedagogy of early childhood into kindergarten through Grade 2. Embedded in the curriculum are center/studio time where children play or work collaboratively, teacher-led small-group instruction, daily read-alouds, theme-based and project-based lessons, storytelling, and opportunities for feedback.[76]

The district pursued accreditation from the National Association for the Education of Young Children (NAEYC) for its Pre-K and kindergarten classrooms as a structural lever for quality improvement. They used this process to build a culture of early learning across the district's elementary schools and to bring principals into meaningful dialogue about developmentally informed practice. Woven throughout all grade levels are storytelling and story acting and a thinking-and-feedback protocol that treats children's play and creations as worthy of serious discussion. Professional development reinforces this work with the district's annual kindergarten conference and ongoing coaching by DEC.



Fostering Playful Learning Practices in PK-3

In 2023, with funding from the state's Elementary and Secondary School Emergency Relief, the Massachusetts Department of Elementary and Secondary Education launched its Playful Learning Institute (PLI)[77] developed in collaboration with Boston Public Schools. For several years, Boston Public Schools has embedded playful learning practices in preschool, kindergarten and the early grades, and other Massachusetts school districts expressed interest in exploring how to implement these in their own schools.

PLI launched with five schools and has expanded over three years, providing coaching and resources to several schools across Massachusetts, in rural, suburban, and urban communities. Rather than promoting specific curricula, the Institute centers its approach on six playful practices: community meetings, centers and studios, storytelling and story acting, writing, thinking and feedback, and read-alouds and text talks. Promoting a playful learning approach that is not directly tied to a specific curriculum may help sustain it in schools[78] since school districts regularly adopt new curricula to stay aligned with current research. Further, because school districts typically adopt curricula separately for Pre-K and K-Grade 5, Massachusetts is intentionally building alignment across the PK-3 span.

Protecting Children's "Work Time"

When Kristi Dominguez, a former kindergarten teacher, became superintendent of Ferndale School District in Washington state in 2022, she directed her staff to convene an early learning task force that brought together teachers, principals, parents, and community members to assess kindergarten and develop a shared vision. The taskforce delivered recommendations that Dominguez adopted as the district's early learning plan , with child-centered, play-based pedagogy at its core. In the 2023-2024 school year, Ferndale began implementing "children's work time," a full, uninterrupted hour of daily guided play, deliberately scheduled during prime instructional hours rather than tacked on at the end of the day. The placement signaled to teachers, families, and principals that play is not a reward or a break from learning. It *is* the learning.

The district invested in high-quality materials, including open-ended art supplies, blocks, sensory bins, and imaginary play props, to ensure that every kindergarten classroom had the same tools regardless of which school a child attended. The district also invested in teacher training to shift their roles from directors to facilitators. During work time, teachers circulate—asking probing questions, noting children's observations and understanding, and using the information to determine small groups for targeted instruction.[79]

STATE LEGISLATION

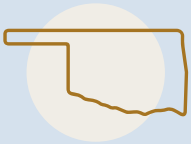
To shift the trajectory of instructional practices that are misaligned with developmental science and how young children actually learn, a handful of states have enacted legislation to safeguard play-based PK-3 learning environments.

New Hampshire

In 2018, New Hampshire passed a law requiring kindergarten learning environments that allow children to move freely, explore, engage in creative expression, and initiate play.[80] In 2026, legislators introduced a new bill to extend the play-based approach enacted in 2018 through Grade 3. The new language states, "Educators shall create a learning environment that facilitates high-quality, child-directed experiences based upon early childhood best teaching practices and play-based learning that comprise movement, creative expression, exploration, socialization, and music".[81] It also extends recess for all children from kindergarten through Grade 8 and prohibits the denial of recess as a disciplinary measure.[82] At the time this brief was being written, the legislation was still pending and working its way through the legislative process.

The New Hampshire law was a good first step by establishing a requirement, but it did not define play-based learning, address implementation needs, or allocate funding. Teachers had questions about how to shift from teacher-directed instruction to play-based learning while still meeting state academic standards. Through the federal Preschool Development Grant (PDG) program, the state awarded a subgrant of $26.8 million dollars to the University of New Hampshire's Early Childhood Initiative to enhance the State's early childhood system, including defining play-based learning as a child-directed, teacher-facilitated approach that is enjoyable, process-oriented, and essential for holistic development, and providing coaching for teachers to implement the new requirements.[83] By clearly defining play-based learning and providing much-needed supports and resources, the state increased teacher efficacy and its use of play-based instruction.[84]

The LEGO Foundation provided $1.3 million dollars to the University of New Hampshire to further assist teachers in meeting the State mandate. This funding provided training in over 64 school districts to increase the use of guided play and coaches to support teachers in incorporating play in their classrooms. Initial data show an increase in teacher confidence in guided play, where coaching is available. These teachers report fewer behavioral concerns, better social and emotional regulation among kindergartners, and increased positive social interactions in their classrooms.[85]



Oklahoma

The 2021 Play to Learn Act in Oklahoma defined early childhood education as Pre-K through 3rd grade.[86] The law defines play as the spontaneous activity of children and play-based learning as critical for a child's overall development. The law specifies play-based learning as joyful and child directed, to "focus on the importance of child-centered, play-based learning as the most rigorous and most developmentally appropriate way for children in the early childhood grade levels to learn literacy, science, technology, engineering, art, and math academic concepts".[87] One of the most compelling features of this law is that it explicitly restricts school districts from preventing teachers from using play-based learning in early

childhood education.[88] The Oklahoma State Department of Education's efforts to support implementation included professional learning sessions, Playing with Purpose, emphasizing how intentional, play-centered instruction strengthens children's mastery of state standards through deeper engagement and understanding.[89]

Connecticut

In 2024, Connecticut passed a law mandating the use of play-based instruction in preschool and kindergarten and strongly encourages and intentionally authorizes its use in Grades 1–5.[90] The law overtly acknowledges the importance of developmentally aligned instruction in the early grades but goes a step further by creating a structure to extend playful learning practices across all elementary years. Connecticut has enhanced professional development activities, materials, products, and resources to assist teachers in operationalizing and implementing play-based learning at all grade levels.[91]

Areas to Take Action

ACTIONS FOR SEAS AND LEAS

SEAs play an important role in establishing the conditions that enable local schools, educators, and communities to operationalize early learning pedagogy in the classroom, helping the youngest students gain a solid educational foundation. LEAs translate state policies for practical application at the district, school, and classroom levels. They ensure supports, resources, and professional development activities meet the developmental needs of every child.

- **Adopt language that bridges the PK-3 continuum.** Given pedagogical differences between preschool and the early elementary grades, SEAs may consider shifting terminology from "play-based learning" to "active learning" or "experiential learning"[92] to promote broader educator and school administrator buy-in across the continuum. Regardless of the terminology used, however, SEAs and LEAs should make clear that educational play is defined by qualities rather than specific activity types. Educational play is meaningful, joyful, iterative, activity-engaging, and socially interactive.[93]
- **Operationalize guided play for classroom practices.** Provide clear guidance for practitioners on what guided play looks like in PK-3 settings, including how educators can effectively embed learning opportunities across developmental and academic domains within scaffolded play experiences. This includes developing observation tools, instructional examples, and professional learning supports aligned with the tenets of early learning pedagogy.
- **Set curricular expectations that promote all children's developmental domains.** Establishing curricula criteria across the PK-3 continuum that promote learning outcomes across all developmental domains, include an emphasis on active play-based learning, and offer sufficient flexibility for teachers and schools to adapt curricula and instruction to the needs of children of their communities.
- **Support and incentivize professional development offerings, mentoring, and coaching for PK-3 practitioners** in research-informed guided play practices that can be used to address literacy and math learning outcomes as well as social skills and emotion regulation, science and social studies, problem-solving, and creativity.
- **Consider assessment policies that shift away from systems that rely solely on discrete skill-based measures and instead establish policies that support the use of authentic, valid, and reliable assessments** situated within play-based learning. Specifically, assessment systems in PK-3 should address all domains of child development, be embedded in authentic learning contexts, be able to identify children who need specific supports, and generate actionable information for educators and schools.
- **Engage parents and other family members in program planning and implementation concerning developmentally informed practices** while recognizing the barriers some family members may face in participating and offering alternatives to participation.

ACTIONS FOR EDUCATION PRACTITIONERS

- **Prioritize play as a foundational teaching strategy.** Educators should ensure play-based learning for all children, including those who are not meeting school readiness or grade level expectations and arrange intentional teacher support during play-based activities. Principals can monitor scheduling and grouping practices to ensure that intervention time is not replacing play for students who need it most.

- **Use authentic, reliable, and valid assessments that capture the full range of what children know and how children learn.** Assessment should be able to measure targeted learning outcomes through play-based learning, including child-directed, guided play, and adult-facilitated play experiences.
- **Be intentional and strategic about when independent seatwork is used.** In K-3 classrooms, educators should reserve independent seatwork for learning objectives that genuinely require it, rather than as a default instructional mode. Educators mix and vary the contexts in which students learn and include paired peer, small group and whole group activities when it matches the learning objectives. When independent seatwork is required, it should be balanced with freeplay, guided play and/or active play such as recess. Principals can support teachers in designing schedules that protect time for different learning modalities and resist pressure to reduce or eliminate opportunities for play.
- **Improve parents' awareness of the role of play in the classroom** by sharing weekly notes about how children engage in play, inviting families to co-learn during center time or classroom projects, or offering play-based parent-teacher-child nights where children lead the parents in play.

ACTIONS FOR PARENTS AND FAMILIES

- **Partner with teachers to support play-based learning.** Parents and families are key influences in their child's learning and development. Parents and families can engage with their child's teacher in a variety of ways to partner on providing high-quality experiences, such as:
  - Reviewing the daily routine, recess policies, and time scheduled for different types of play and playful learning, and communicating their preferences to school leaders.
  - Asking the teacher what play-based learning looks like in their classroom, how often play-based activities happen, and how they support children's growth and development in literacy, math, and science.
  - Discussing how you can extend school activities at home for continuity.
  - Donating materials and suggest play-based activities
- **Support play-based learning at home.** Parents and families can play with their child while following their lead, including providing many opportunities for their child to explore and experiment through play, and, when possible, including plenty of time for unstructured play that is unscheduled and screen-free. To do this, parents can consider offering plenty of creative materials for children to use in the home (e.g., nature-based items such as branches, leaves, dirt; recycled materials such as cardboard, plastic lids and containers, and buttons; and traditional materials such as crayons, paint, paper, yarn, and fabric).
- **Communicate the importance of play-based learning.** Parents and families can use their voices to advocate for play-based opportunities in educational settings and beyond. This can look like:
  - Bringing up the importance of play-based learning while interacting with other parents, and advocating for it in your child's school or program.
  - Attending school board meetings and participating in parent-teacher organization (PTO) meetings to promote the importance of play-based learning.
  - Working with your neighbors and other community members to ensure play opportunities are available in libraries, community centers, and other spaces frequented by children.
  - Requesting funding and support for play-based learning environments from your local, state, and federal policymakers.

Conclusion

High-quality experiences in the early grades draw on the science of learning and a deep understanding of child development. Effective early learning pedagogy is science-based and grounded in how children grow and learn across interconnected domains. It is relational, recognizing that trusting relationships between children and adults are foundational to learning. Honoring play is a primary vehicle through which young students make meaning of their world and what they are learning. It is intentionally rigorous, weaving together active learning, responsiveness, and flexibility to support the whole child. And it is a coherent continuum across PK-3, where classrooms support child development, learning, agency, positive relationships with adults, and joyful associations with school.

This brief highlights both the opportunities and the challenges related to the pedagogy of early learning. SEAs, LEAs, and education administrators across the U.S. serve as positive case studies of how legislative actions and state and local initiatives can support high-quality early learning. Although the evidence is promising and deeply aligned with how children learn best, additional research is warranted to better understand the impact of these pedagogical tenets and to identify which specific practices work best for children and under which circumstances. Early childhood provides a short, yet critical, window of opportunity. Using these tenets will help ensure a strong foundation for children's future learning and development.

Resources

Active Playful Learning
https://activeplayfullearning.com/

Boston Public Schools, *Focus* Curriculum
https://www.bostonpublicschools.org/academics/focus-curriculum

Brookings, Playful Learning
https://www.brookings.edu/tags/playful-learning/

Focus on Developmentally Appropriate Practice: Equitable and Joyful Learning in Kindergarten, NAEYC
https://www.naeyc.org/resources/pubs/books/dap-focus-kindergarten

The LEGO Foundation, *Learning through Play*
learningthroughplay.com

Massachusetts Department of Elementary and Secondary Education, *Playful Learning Institute*
https://www.doe.mass.edu/sfs/earlylearning/pli.html

New America, Transforming Kindergarten
https://www.newamerica.org/collections/transforming-kindergarten/

Project Zero Pedagogy of Play
https://pz.harvard.edu/resources/pedagogy-of-play-book

U.S. Administration for Children and Families, U.S. Department of Education, Office of Special Education Programs, Early Childhood Technical Assistance Center
https://ectacenter.org/

U.S. Department of Education, National Comprehensive Center Network
https://compcenternetwork.org/

Endnotes

1 Shonkoff, J. P., & Phillips, D. A. (Eds.). (2000). *From neurons to neighborhoods: The science of early childhood development*. National Academy Press; Bogard, K., & Takanishi, R. (2005). PK-3: An aligned and coordinated approach to education for children 3 to 8 years old. *Social Policy Report, 19*(3), 1–23. https://doi.org/10.1002/j.2379-3988.2005.tb00049.x

2 Hirsh-Pasek, K., Golinkoff, R., Berk, L., & Singer, D. (2009). *A mandate for playful learning in preschool: Presenting the evidence*. Oxford University Press; Yogman, M., Garner, A., Hutchinson, J., Hirsh-Pasek, K., Golinkoff, R. M., & Committee on Psychosocial Aspects of Child and Family Health. (2018). The power of play: A pediatric role in enhancing development in young children. *Pediatrics, 142*(3), e20182058. https://doi.org/10.1542/peds.2018-2058; National Association for the Education of Young Children. (2020). *Developmentally appropriate practice: A position statement of the National Association for the Education of Young Children*. NAEYC.

3 Carr, M., Cowie, B., & Mitchell, L. (2016). Documentation in early childhood research: Practice and research informing each other. In A. Farrell, S. L. Kagan, & E. M. Tisdall (Eds.), *Documentation in early childhood research: Practice and research informing each other* (pp. 277–290). SAGE Publications. https://doi.org/10.4135/9781473920859.n17; Knauf, H. (2022). *Pedagogical documentation in early childhood education: Process-oriented procedures for documenting education and development.* Springer. https://link.springer.com/book/10.1007/978-3-658-39736-4;

4 National Association for the Education of Young Children. (2020). *Developmentally appropriate practice: A position statement of the National Association for the Education of Young Children*. NAEYC.

5 Bassok, D., Latham, S., & Rorem, A. (2016). Is kindergarten the new first grade? *AERA Open, 2*(1). https://files.eric.ed.gov/fulltext/EJ1194581.pdf; Nicholson, D. (2019). Play-based pedagogy under threat? A small-scale study of teachers' and pupils' perceptions of pedagogical discontinuity in the transition to primary school. *Education,* 47(4), 3–13. https://doi.org/10.1080/03004279.2018.1496124; Golinkoff, R. M., & Hirsh-Pasek, K. (2016). *Becoming brilliant: What science tells us about raising successful children.*

6 Shonkoff, J. P., & Phillips, D. A. (Eds.). (2000). *From neurons to neighborhoods: The science of early childhood development*. National Academy Press; National Scientific Council on the Developing Child. (2018). *Understanding motivation: Building the brain architecture that supports learning, health, and community participation* (Working Paper No. 14). Harvard Center on the Developing Child. https://developingchild.harvard.edu

7 Doebel, S. (2020). Rethinking executive function and its development. *Perspectives on Psychological Science, 15*(4), 942–956. https://doi.org/10.1177/1745691620904771; Doebel, S., & Zelazo, P. D. (2015). A meta-analysis of the Dimensional Change Card Sort: Implications for developmental theories and the measurement of executive function in children. *Developmental Review, 38,* 241–268. https://doi.org/10.1016/j.dr.2015.09.001; Diamond, A. (2013). Want to optimize executive functions and academic outcomes? Simple, just nourish the human spirit. *Minnesota Symposia on Child Psychology, 37,* 203–230.

8 National Scientific Council on the Developing Child. (2005). *Excessive stress disrupts the architecture of the developing brain: Working paper #3.* https://developingchild.harvard.edu/wp-content/uploads/2024/10/Stress_Disrupts_Architecture_Developing_Brain-1.pdf.

9 Yogman, M., Garner, A., Hutchinson, J., Hirsh-Pasek, K., Golinkoff, R. M., & Committee on Psychosocial Aspects of Child and Family Health. (2018). The power of play: A pediatric role in enhancing development in young children. *Pediatrics, 142*(3), e20182058. https://doi.org/10.1542/peds.2018-2058.

10 Nicholson, D. (2019). Play-based pedagogy under threat? A small-scale study of teachers' and pupils' perceptions of pedagogical discontinuity in the transition to primary school. *Education, 47*(4), 3–13. https://doi.org/10.1080/03004279.2018.1496124.

11 Bassok, D., Latham, S., & Rorem, A. (2016). Is kindergarten the new first grade? *AERA Open, 2*(1). https://files.eric.ed.gov/fulltext/EJ1194581.pdf

12 National Center for Education Statistics. (2025, January 29). *2024 NAEP reading assessment results at grades 4 and 8 (NCES 2024-220)*. Institute of Education Sciences, U.S. Department of Education. https://nces.ed.gov/nationsreportcard/

13 National Center for Education Statistics. (2025, January 29). *2024 NAEP reading assessment results at grades 4 and 8 (NCES 2024-220)*. Institute of Education Sciences, U.S. Department of Education. https://nces.ed.gov/nationsreportcard/.

14 **Note:** Citations and references are found in the full research brief.

15 Shonkoff, J. P., & Phillips, D. A. (Eds.). (2000). *From neurons to neighborhoods: The science of early childhood development*. National Academy Press; Bogard, K., & Takanishi, R. (2005). PK-3: An aligned and coordinated approach to education for children 3 to 8 years old. *Social Policy Report, 19*(3), 1–23. https://doi.org/10.1002/j.2379-3988.2005.tb00049.x

16 Hirsh-Pasek, K., Golinkoff, R., Berk, L., & Singer, D. (2009). *A mandate for playful learning in preschool: Presenting the evidence*. Oxford University Press; Yogman, M., Garner, A., Hutchinson, J., Hirsh-Pasek, K., Golinkoff, R. M., & Committee on Psychosocial Aspects of Child and Family Health. (2018). The power of play: A pediatric role in enhancing development in young children. *Pediatrics, 142*(3), e20182058. https://doi.org/10.1542/peds.2018-2058; National Association for the Education of Young Children. (2020). *Developmentally appropriate practice: A position statement of the National Association for the Education of Young Children.* NAEYC.

17 Carr, M., Cowie, B., & Mitchell, L. (2016). Documentation in early childhood research: Practice and research informing each other. In A. Farrell, S. L. Kagan, & E. M. Tisdall (Eds.), *Documentation in early childhood research: Practice and research informing each other* (pp. 277–290). SAGE Publications. https://doi.org/10.4135/9781473920859.n17; Knauf, H. (2022). *Pedagogical documentation in early childhood education: Process-oriented procedures for documenting education and development*. Springer. https://link.springer.com/book/10.1007/978-3-658-39736-4; National Association for the Education of Young Children. (2020). *Developmentally appropriate practice: A position statement of the National Association for the Education of Young Children.* NAEYC.

18 Bassok, D., Latham, S., & Rorem, A. (2016). Is kindergarten the new first grade? *AERA Open, 2*(1). https://files.eric.ed.gov/fulltext/EJ1194581.pdf; Nicholson, D. (2019). Play-based pedagogy under threat? A small-scale study of teachers' and pupils' perceptions of pedagogical discontinuity in the transition to primary school. *Education,* 47(4), 3–13. https://doi.org/10.1080/03004279.2018.1496124; Golinkoff, R. M., & Hirsh-Pasek, K. (2016). *Becoming brilliant: What science tells us about raising successful children.*

19 Hirsh-Pasek, K., Golinkoff, R., Berk, L., & Singer, D. (2009). *A mandate for playful learning in preschool: Presenting the evidence*. Oxford University Press; Yogman, M., Garner, A., Hutchinson, J., Hirsh-Pasek, K., Golinkoff, R. M., & Committee on Psychosocial Aspects of Child and Family Health. (2018). The power of play: A pediatric role in enhancing development in young children. *Pediatrics, 142*(3), e20182058. https://doi.org/10.1542/peds.2018-2058

20 Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes*. Harvard University Press; Piaget, J. (1972). *The psychology of intelligence*. Littlefield.; National Academies of Sciences, Engineering, and Medicine. (2018). *How people learn II: Learners, contexts, and cultures*. The National Academies Press. https://www.nationalacademies.org/projects/DBASSE-BBCSS-13-06/publication/24783

21 Darling-Hammond, L., Flook, L., Cook-Harvey, C., Barron, B., & Osher, D. (2019). Implications for educational practice of the science of learning and development. *Applied Developmental Science, 24*(2), 97–140. https://doi.org/10.1080/10888691.2018.1537791

22 Bassok, D., Latham, S., & Rorem, A. (2016). Is kindergarten the new first grade? *AERA Open, 2*(1). https://files.eric.ed.gov/fulltext/EJ1194581.pdf; Nicholson, D. (2019). Play-based pedagogy under threat? A small-scale study of teachers' and pupils' perceptions of pedagogical discontinuity in the transition to primary school. *Education,* 47(4), 3–13. https://doi.org/10.1080/03004279.2018.1496124

23 Golinkoff, R.M., & Hirsh-Pasek, K. (2016). *Becoming brilliant: What science tells us about raising successful children*. APA LifeTools.

24 Bassok, D., Latham, S., & Rorem, A. (2016). Is Kindergarten the new first grade? *AERA Open, 2*(1). https://files.eric.ed.gov/fulltext/EJ1194581.pdf.

25 No Child Left Behind Act of 2001, Pub. L. No. 107-110, 20 U.S.C. § 6319 (2002).

26 No Child Left Behind Act of 2001, Pub. L. No. 107-110, 20 U.S.C. § 6319 (2002).

27 National Reading Panel. (2000). *Teaching children to read: An evidence-based assessment of the scientific research literature on reading and its implications for reading instruction*. National Institute of Child Health and Human Development. https://www.nichd.nih.gov/publications/pubs/nrp/pages/report.aspx; National Center for Education Statistics. (2025, January 29). *2024 NAEP reading assessment results at grades 4 and 8 (NCES 2024-220)*. Institute of Education Sciences, U.S. Department of Education. https://nces.ed.gov/nationsreportcard/

28 Clements, D. H., Fuson, K. C., & Sarama, J. (2017). The research-based balance in early childhood mathematics: A response to Common Core criticisms. *Early Childhood Research Quarterly, 40,* 150–162. https://doi.org/10.1016/j.ecresq.2017.03.005.

29 Horizon Research, Inc. (2018). *National survey of science & mathematics education.* http://horizon-research.com/NSSME/2018-nssme/research-products/reports/technical-report.

30 Hutton, R., & Allen, L. (Eds.). (2023). *Closing the opportunity gap for young children*. National Academies Press. https://doi.org/10.17226/26743.

31 Stipek, D., Feiler, R., Daniels, D., & Milburn, S. (1995). Effects of different instructional approaches on young children's achievement and motivation. *Child Development, 66*(1), 209–223; Marcon, R. A. (2002). Moving up the grades: Relationship between preschool model and later school success. *Early Childhood Research & Practice, 4*(1); Golinkoff, R. M., & Hirsh-Pasek, K. (2016). *Becoming brilliant: What science tells us about raising successful children.*

32 Stipek, D., Feiler, R., Daniels, D., & Milburn, S. (1995). Effects of different instructional approaches on young children's achievement and motivation. *Child Development, 66*(1), 209–223; Golinkoff, R. M., & Hirsh-Pasek, K. (2016). *Becoming brilliant: What science tells us about raising successful children*; Darling-Hammond, L., Flook, L., Cook-Harvey, C., Barron, B., & Osher, D. (2019). Implications for educational practice of the science of learning and development. *Applied Developmental Science, 24*(2), 97–140. https://doi.org/10.1080/10888691.2018.1537791.

33 National Center for Education Statistics. (2025, January 29). *2024 NAEP reading assessment results at grades 4 and 8 (NCES 2024-220).* Institute of Education Sciences, U.S. Department of Education. https://nces.ed.gov/nationsreportcard/.

34 Walsh, B., Smith, L., & Mercado, K. (2023). *Integrated efficient early care and education systems: Revisiting a state-by-state analysis.* Bipartisan Policy Center. https://bipartisanpolicy.org/wp-content/uploads/2023/01/BPC_State-Governance-Report-1.25.23.pdf.

35 McLean, C., & Kini, T. (2020). Early childhood preparation for school leaders: Lessons from New Jersey principal certification programs. *Education Policy Analysis Archives, 28*(181), 1–35.

36 Darling-Hammond, L., Flook, L., Cook-Harvey, C., Barron, B., & Osher, D. (2019). Implications for educational practice of the science of learning and development. *Applied Developmental Science, 24*(2), 97–140. https://doi.org/10.1080/10888691.2018.1537791; National Academies of Sciences, Engineering, and Medicine. (2018). *How people learn II: Learners, contexts, and cultures*. The National Academies Press. https://www.nationalacademies.org/projects/DBASSE-BBCSS-13-06/publication/24783.

37 National Scientific Council on the Developing Child. (2018). *Understanding motivation: Building the brain architecture that supports learning, health, and community participation* (Working Paper No. 14). Harvard Center on the Developing Child. https://developingchild.harvard.edu.

38 Doebel, S. (2020). Rethinking executive function and its development. *Perspectives on Psychological Science, 15*(4), 942–956. https://doi.org/10.1177/1745691620904771; Doebel, S., & Zelazo, P. D. (2015). A meta-analysis of the Dimensional Change Card Sort: Implications for developmental theories and the measurement of executive function in children. *Developmental Review, 38,* 241–268. https://doi.org/10.1016/j.dr.2015.09.001.

39 Diamond, A., & Lee, K. (2011). Interventions shown to aid EF development in children 4 to 12 years old. *Science, 333*(6045), 959–964. https://doi.org/10.1126/science.1204529; Doebel, S., & Lillard, A. S. (2023). How does play foster development? A new executive function perspective. *Developmental Review, 67,* 101064; White, R. E., & Carlson, S. M. (2016). What would Batman do? Self-distancing improves executive function in young children. *Developmental Science, 19*(3), 419–426. https://doi.org/10.1111/desc.12314.

40 Harvard Center on the Developing Child. https://developingchild.harvard.edu.

41 National Association for the Education of Young Children. (2020). *Developmentally appropriate practice: A position statement of the National Association for the Education of Young Children.* NAEYC; Hirsh-Pasek, K., Golinkoff, R., Berk, L., & Singer, D. (2009). *A mandate for playful learning in preschool: Presenting the evidence.* Oxford University Press.

42 National Association for the Education of Young Children, 2020); Pianta, R. C., & Stuhlman, M. W. (2004). Teacher-child relationships and children's success in the first years of school. *School Psychology Review, 33*(4), 444–458.

43 National Academies of Sciences, Engineering, and Medicine. (2018). *How people learn II: Learners, contexts, and cultures*. The National Academies Press. https://www.nationalacademies.org/projects/DBASSE-BBCSS-13-06/publication/24783; Darling-Hammond, L., Flook, L., Cook-Harvey, C., Barron, B., & Osher, D. (2019). Implications for educational practice of the science of learning and development. *Applied Developmental Science, 24*(2), 97–140. https://doi.org/10.1080/10888691.2018.1537791

44 Clements, D. H., Fuson, K. C., & Sarama, J. (2017). The research-based balance in early childhood mathematics: A response to Common Core criticisms. *Early Childhood Research Quarterly, 40,* 150–162. https://doi.org/10.1016/j.ecresq.2017.03.005; Brenneman, K., Stevenson-Boyd, J., & Frede, E. C. (2009). *Math and science in preschool: Policies and practice.* National Institute for Early Education Research. https://nieer.org/sites/default/files/2023-08/20.pdf

45 Neuman, S. B., & Dwyer, J. (2009). Missing in action: Vocabulary instruction in pre-K. *The Reading Teacher, 62*(5), 384–392; Cervetti, G. N., & Hiebert, E. H. (2015). Knowledge, literacy, and the Common Core. *Language Arts, 92*(4), 256–269.

46 Golinkoff, R. M., & Hirsh-Pasek, K. (2016). *Becoming brilliant: What science tells us about raising successful children;* National Association for the Education of Young Children. (2020). *Developmentally appropriate practice: A position statement of the National Association for the Education of Young Children.* NAEYC.

47 Pianta, R. C., Stuhlman, M. W. (2004). Teacher-child relationships and children's success in the first years of school. *School Psychology Review, 33*(4), 444–458.

48 National Association for the Education of Young Children. (2020). *Developmentally appropriate practice: A position statement of the National Association for the Education of Young Children.* NAEYC.

49 Darling-Hammond, L., Flook, L., Cook-Harvey, C., Barron, B., & Osher, D. (2019). Implications for educational practice of the science of learning and development. *Applied Developmental Science, 24*(2), 97–140. https://doi.org/10.1080/10888691.2018.1537791; Yogman, M., Garner, A., Hutchinson, J., Hirsh-Pasek, K., Golinkoff, R. M., & Committee on Psychosocial Aspects of Child and Family Health. (2018). The power of play: A pediatric role in enhancing development in young children. *Pediatrics*, *142*(3), e20182058. https://doi.org/10.1542/peds.2018-2058

50 Hirsh-Pasek, K., Golinkoff, R., Berk, L., & Singer, D. (2009). *A mandate for playful learning in preschool: Presenting the evidence.* Oxford University Press; Nicholson, D. (2019). Play-based pedagogy under threat? A small-scale study of teachers' and pupils' perceptions of pedagogical discontinuity in the transition to primary school. *Education, 47*(4), 3–13. https://doi.org/10.1080/03004279.2018.1496124; Pyle, A., & Danniels, E. (2016). A continuum of play-based learning: The role of the teacher in play-based pedagogy and the fear of hijacking play. *Early Education and Development, 23,* 274–289. https://doi.org/10.1080/10409289.2016.1220771

51 Parker, R. & Thomsen, B. S. (2019). *Learning through play at school: A study of playful integrated pedagogies that foster children's holistic skills development in the primary school classroom.* LEGO Foundation; Stipek, D., Feiler, R., Daniels, D., & Milburn, S. (1995). Effects of different instructional approaches on young children's achievement and motivation. *Child Development, 66*(1), 209–223; Yogman, M., Garner, A., Hutchinson, J., Hirsh-Pasek, K., Golinkoff, R. M., & Committee on Psychosocial Aspects of Child and Family Health. (2018). The power of play: A pediatric role in enhancing development in young children. *Pediatrics, 142*(3), e20182058. https://doi.org/10.1542/peds.2018-2058.

52 Parker, R., and Thomsen, B. S. (2019). *Learning through play at school: A study of playful integrated pedagogies that foster children's holistic skills development in the primary school classroom.* LEGO Foundation.

53 Hirsh-Pasek, K., Golinkoff, R., Berk, L., & Singer, D. (2009). *A mandate for playful learning in preschool: Presenting the evidence.* Oxford University Press; Nicolopoulou, A., Cortina, K. S., Ilgaz, H., Cates, C. B., & de Sá, A. B. (2015). Using a narrative-and play-based activity to promote low-income preschoolers' oral language, emergent literacy, and social competence. *Early Childhood Research Quarterly, 31,* 147-162. https://doi.org/10.1016/j.ecresq.2015.01.006.

54 Marcon, R. A. (2002). Moving up the grades: Relationship between preschool model and later school success. *Early Childhood Research & Practice,* 4(1); Stipek, D., Feiler, R., Daniels, D., & Milburn, S. (1995). Effects of different instructional approaches on young children's achievement and motivation. *Child Development, 66*(1), 209-223.

55 Marcon, R. A. (2002). Moving up the grades: Relationship between preschool model and later school success. *Early Childhood Research & Practice,* 4(1); Lipsey, M.W., Farran, D.C., & Durkin, K. (2018). Effects of the Tennessee Prekindergarten Program on children's achievement and behavior through third grade. *Early Childhood Research Quarterly, 45,* 155-176.

56 Stipek, D., Feiler, R., Daniels, D., & Milburn, S. (1995). Effects of different instructional approaches on young children's achievement and motivation. *Child Development, 66*(1), 209-223.

57 Zosh, J. M., Hopkins, E. J., Jensen, H., Liu, C., Neale, D., Hirsh-Pasek, K., et al. (2017). *Learning through play: A review of the evidence.* LEGO Foundation.

58 Lillard, A. S., Lerner, M. D., Hopkins, E. J., Dore, R. A., Smith, E. D., & Palmquist, C. M. (2013). The impact

of pretend play on children's development: a review of the evidence. *Psychological Bulletin, 139*(1), 1–34. https://doi.org/10.1037/a0029321; Nicolopoulou, A., Cortina, K. S., Ilgaz, H., Cates, C. B., & de Sá, A. B. (2015). Using a narrative-and play-based activity to promote low-income preschoolers' oral language, emergent literacy, and social competence. *Early Childhood Research Quarterly, 31,* 147-162. https://doi.org/10.1016/j.ecresq.2015.01.006; Smits-van der Nat, M., van der Wilt, F., Meeter, M., & van der Veen, C. (2024). The value of pretend play for social competence in early childhood: A meta-analysis. *Educational Psychology Review, 36*(2), 46.

59 Cankaya, O., Martin, M., & Haugen, D. (2025). The relationship between children's indoor loose parts play and cognitive development: A systematic review. *Journal of Intelligence, 13*(5), 52. https://doi.org/10.3390/jintelligence13050052; Verdine, B. N., Golinkoff, R. M., Hirsh-Pasek, K., Newcombe, N. S., Filipowicz, A. T., & Chang, A. (2014). Deconstructing building blocks: Preschoolers' spatial assembly performance relates to early mathematical skills. *Child Development, 85*(3), 1062-1076.

60 Bonawitz, E. B., van Schijndel, T. J., Friel, D., & Schulz, L. (2012). Children balance theories and evidence in exploration, explanation, and learning. *Cognitive Psychology, 64*(4), 215-234; Neuman, S.B. & Dwyer, J. (2009). Missing in action: Vocabulary instruction in pre-K. *The Reading Teacher, 62*(5), 384-392; Nicolopoulou, A., Cortina, K. S., Ilgaz, H., Cates, C. B., & de Sá, A. B. (2015). Using a narrative-and play-based activity to promote low-income preschoolers' oral language, emergent literacy, and social competence. *Early Childhood Research Quarterly, 31,* 147-162. https://doi.org/10.1016/j.ecresq.2015.01.006.

61 Piaget, J. (1972). The psychology of intelligence. Routledge.

62 Vygotsky, L. S. (1978). Mind in society: The development of higher psychological processes. Harvard University Press; Weisberg, D., Hirsh-Pasek, K., Golinkoff, R., Kittredge, A., & Klahr, D. (2016). Guided play: Principles and practice. *Current Directions in Psychological Science, 25,* 177–182. https://doi.org/10.1177/0963721416645512.

63 Hmelo-Silver, C. E., Duncan, R. G., & Chinn, C. A. (2007). Scaffolding and achievement in problem-based and inquiry learning: a response to Kirschner, Sweller, and Clark (2006). *Educational Psychologist, 42*(2), 99-107. https://doi.org/10.1080/00461520701263368.

64 Skene, K., O'Farrelly, C.M., Byrne, E.M., Kirby, N., Stevens, E.C., & Ramchandani, P.G. (2022). Can guidance during play enhance children's learning and development in educational contexts? A systematic review and meta-analysis. *Child Development,* 93, 1162-1180. https://pubmed.ncbi.nlm.nih.gov/35018635/.

65 Skene, K., O'Farrelly, C.M., Byrne, E.M., Kirby, N., Stevens, E.C., & Ramchandani, P.G. (2022). Can guidance during play enhance children's learning and development in educational contexts? A systematic review and meta-analysis. *Child Development,* 93, 1162-1180. https://pubmed.ncbi.nlm.nih.gov/35018635/,

66 Alfieri, L., Brooks, P., Aldrich, N., & Tenenbaum, H. (2011). Does discovery-based instruction enhance learning? *Journal of Educational Psychology, 103,* 1–18. https://doi.org/10.1037/a0021017.

67 Arnott, L., Palaiologou, I. and Gray, C. (2018), Digital devices, internet-enabled toys and digital games: The changing nature of young children's learning ecologies, experiences and pedagogies. *British Journal of Educational Technology, 49,* 803-806. https://doi.org/10.1111/bjet.12676.

68 Eales, L., Gillespie, S., Alstat, R. A., Ferguson, G. M., & Carlson, S. M. (2021). Children's screen and

problematic media use in the United States before and during the COVID-19 pandemic. *Child Development,* 92(5), e866–e882.

69 Alotaibi, M.S. (2024). Game-based learning in early childhood education: A systematic review and meta-analysis. *Frontiers in Psychology, 15,* 1307881. https://doi.org/10.3389/fpsyg.2024.1307881; Park, J. H., & Park, M. (2021). Smartphone use patterns and problematic smartphone use among preschool children. *PLoS One, 16,* e0244276. https://doi.org/10.1371/journal.pone.0244276.

70 Parker, R., Thomsen, B.S., & Berry, A. (2022) Learning through play at school – A framework for policy and practice. *Frontiers in Education, 7,* 1-12. https://doi.org/10.3389/feduc.2022.751801.

71 Bubikova-Moan, J., Næss Hjetland, H., & Wollscheid, S. (2019). ECE teachers' views on play-based learning: a systematic review. *European Early Childhood Education Research Journal, 27*(6), 776–800. https://doi.org/10.1080/1350293X.2019.1678717.

72 Early Milestones Colorado. (2023, December 18). *A partnership to expand ideal learning environments in Colorado.* https://earlymilestones.org/a-partnership-to-expand-ideal-learning-environments-in-colorado/; Trust for Learning. (2020). *Principles of ideal learning environments.* https://trustforlearning.org/wp-content/uploads/2020/09/SHORT-Principles-of-Ideal-Learning-042821-Final-1.pdf.

73 Tools of the Mind. (n.d.). *Blueprints programs*. https://www.blueprintsprograms.org/programs/1008999999/tools-of-the-mind/print.

74 Tools of the Mind. (n.d.). *Blueprints programs.* https://www.blueprintsprograms.org/programs/1008999999/tools-of-the-mind/print.

75 Early Milestones Colorado. (2023, December 18). *A partnership to expand ideal learning environments in Colorado.* https://earlymilestones.org/a-partnership-to-expand-ideal-learning-environments-in-colorado/.

76 Bardige, B., Baker, M., & Mardell, B. (2018). *Children at the center: Transforming early childhood education in the Boston Public Schools*. Harvard Education Press.

77 Massachusetts Department of Elementary and Secondary Education. (2026). *Playful learning institute, preschool – 3rd grade*. Student and family support. https://www.doe.mass.edu/sfs/earlylearning/pli.html.

78 Parker, R., Thomsen, B. S., & Berry, A. (2022). Learning through play at school – A framework for policy and practice. *Frontiers in Education, 7,* 751801. https://doi.org/10.3389/feduc.2022.751801.

79 Bornfreund, Laura. (2026). *Rediscovering Kindergarten: Embracing play and joy in learning*. Gryphon House..

80 New Hampshire General Court. (2018). HB 1499, An act relative to the focus and components of New Hampshire kindergartens. 2018 N.H. Laws Ch. 224.

81 LegiScan (n.d.) New Hampshire Senate Bill 578. https://legiscan.com/NH/text/SB578/id/3370880

82 S.B. 578, 2026 Reg. Sess. (New Hampshire 2025). https://legiscan.com/NH/bill/SB578/2026.

83 University of New Hampshire. (n.d.). New Hampshire Preschool Development Grant project. Carsey

School of Public Policy. https://carsey.unh.edu/center-social-policy-practice/new-hampshire-preschool-development-grant-project

84 New Hampshire Department of Health and Human Services. (n.d.). *Practice-based coaching to support play-based learning in New Hampshire. Preschool Development Grant.* https://scholars.unh.edu/cgi/viewcontent.cgi?article=1000&context=preschool_development_grant.

85 Gibson, S. (2024). *Inside the effort to bring 'guided play' to more NH kindergarten classrooms.* New Hampshire Public Radio. https://www.nhpr.org/education/2024-02-29/manchester-teachers-team-up-with-unh-to-bring-guided-play-to-kindergarten-classrooms.

86 New America. (2026, February 16). State laws requiring play-based learning. New America. https://www.newamerica.org/education-policy/briefs/state-laws-requiring-play-based-learning/

87 Oklahoma Legislature. (2021). *An Act (Enrolled House Bill No. 1569): Schools; allowing instruction in early childhood education to foster certain development and learning; emergency* (2021 Oklahoma HB 1569). https://www.oklegislature.gov/BillInfo.aspx?Bill=HB1569&Session=2100.

88 Oklahoma Legislature. (2021). *An Act (Enrolled House Bill No. 1569): Schools; allowing instruction in early childhood education to foster certain development and learning; emergency* (2021 Oklahoma HB 1569). https://www.oklegislature.gov/BillInfo.aspx?Bill=HB1569&Session=2100.

89 Blinkoff, E., Fletcher, K., Wright, C., Espinoza, S. and Hirsh-Pasek, K. (2023). *Tracking the winds of change on the American education policy landscape: The emergence of play-based learning legislation and its implications for the classroom*. https://www.brookings.edu/articles/tracking-the-winds-of-change-on-the-american-education-policy-landscape-the-emergence-of-play-based-learning-legislation-and-its-implications-for-the-classroom/; Bornfreund, L. (2023, July 28). *State laws requiring play-based learning.* New America. https://www.newamerica.org/education-policy/edcentral/state-laws-requiring-play-based-learning/.

90 Connecticut General Statutes, Title 10, Ch. 164, §10-24f ,2024.

91 Connecticut Education Association. (2025, November 25). *Powered by curiosity: Reimagining learning from pre-K to 12.* https://cea.org/powered-by-curiosity-reimagining-learning-from-pre-k-to-12/.

92 Martlew, J., Stephen, C., & Ellis, J. (2011). Play in the primary school classroom? The experience of teachers supporting children's learning through a new pedagogy. *Early Years, 31*(1), 71–83. https://doi.org/10.1080/09575146.2010.529425.

93 Zosh, J. M., Hopkins, E. J., Jensen, H., Liu, C., Neale, D., Hirsh-Pasek, K., Lynneth Solis, S., & Whitebread, D. (2017). *Learning through play: A review of the evidence.* LEGO Foundation. https://doi.org/10.13140/RG.2.2.16823.01447.