



Gates Foundation

NASEM Guidance on Selecting High-Quality Preschool Curriculum

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What are the committee's recommendations for states regarding the adoption and implementation of evidence-based preschool curricula?

Recommendation 2

In the next 5 years, **program leaders should transition to adopting and implementing evidence-validated curricula** that, when integrated coherently, support the learning and development of the whole child. Essential features of evidence-based curricula include developmentally appropriate learning goals, a scope and sequence, coherent alignment with specific domains, and rich content.

Recommendation 8

Program leaders and policy makers should ensure that educators receive **professional development, regular in-classroom coaching, and access to materials tied to the implementation of evidence-based curricula**, including supports for delivering curricula in children's home language alongside English, or for monolingual English-speaking teachers, supporting multilingual learners through cross-linguistic connections and other research-informed practices that bridge languages.

Recommendation 15

To build the necessary evidence base over the next 5–10 years, relevant federal agencies, **states**, and philanthropies **should invest in ongoing research aimed at developing implementation systems to support the transition to evidence-based curricula that are practical and accessible.**

What are comprehensive and domain-specific curricula?



Comprehensive curricula (also called global or whole-child curricula) address all or most developmental domains.



Domain- or content-specific curricula address one or a limited number of developmental domains or content areas.

What are the advantages and disadvantages of comprehensive and domain-specific curricula?

	Comprehensive	Domain-specific
Advantages 	● Comprehensive domain coverage: All instructional content is theoretically coherent and aligned within one set of curriculum materials, without requiring early childhood educators to determine the pacing and integration of multiple curricula. ● Comprehensive curriculum is often required: ○ Most states promote the use of comprehensive curricula, and some require the use of a comprehensive curriculum. ○ Head Start requires the use of comprehensive curriculum.	● Domain depth: The instructional materials provide more depth and focus in the domain(s) covered to support child learning in the targeted area(s). ● Strong efficacy evidence: Several domain-specific curricula have strong evidence of supporting improved child learning outcomes. Domain-specific curricula with the strongest track record have a specific scope and sequence intended to align with the science of children’s development and learning in the target area (Sarama et al., 2017; Weiland et al., 2018; Yoshikawa et al., 2013).
Disadvantages 	● Lack of scope and sequence: Some (though not all) comprehensive curricula do not have a clear scope and sequence (i.e. the curriculum includes activities to be carried out in a particular order, to match children’s developmental trajectories). ● Lack of efficacy evidence: Across multiple research studies, there is little to no evidence of efficacy related to improved student learning outcomes for commonly used comprehensive curricula.	● Need multiple curricula: Domain-specific curricula intentionally cover a single or limited number of domains. Multiple domain-specific curricula are thus needed to support the development of the whole child. The integrated implementation of multiple curricula can be challenging. ● Domain-specific curricula are not often promoted or reviewed:: Most states do not promote or review domain-specific curricula.

What does “evidence-based” mean?

“Evidence-based” means:

- Rigorously evaluated and shown to support positive child outcomes through one or more well-designed research studies that include control or comparison groups
- Research shows positive learning outcomes from its use with children of racially, ethnically, linguistically, culturally, and socioeconomically diverse backgrounds.

“

Full development of high-quality curricula includes establishing evidence that supports their effectiveness (National Academies, 2022), meaning that the curriculum is both research based and empirically validated (Clements, 2007).

What else is important to look for in studies of curriculum effectiveness?

Consistency or variability of curriculum effects across contexts, conditions, and student populations:

- Given the diversity of early education settings, educators, and children, **it is important to look not only at “average effects” of curriculum but also at the specific contexts and conditions under which curricula can succeed, and for which students** (Weiss et al., 2014).

“

Variation in curriculum effects is important if the size of the average difference between children who did and did not experience the curriculum differs systematically across groups of students, settings, delivery approaches, and outcomes. For example, a curriculum may be found to have a small average effect in improving students' early literacy skills, but the magnitude of the effect may vary substantially by preschool setting (e.g., Head Start versus child care center), by the experience of the educator delivering the curriculum, or by students' home language experiences and the outcomes measured.

*From a policy perspective, understanding variation in curriculum effects is important because decision makers are often asked to make choices about the curriculum approaches that will best serve their communities and narrow early opportunity gaps for historically marginalized children. If the effects of curricula vary, there may not be a “one-size-fits-all” approach for choosing a preschool curriculum. **Decision makers therefore need evidence about the extent to which curriculum effects vary, and the types of curricula that would be most effective for their specific settings, teachers, and students.** Ideally, the curricula chosen will promote the learning of all students and will build on the strengths of children from diverse backgrounds.*

To what extent are comprehensive curricula evidence-based?

Commonly used comprehensive curricula do not have strong evidence of efficacy with effects similar to those of teacher- or locally developed curriculum approaches.

- Jenkins et al. (2018) compared curriculum effects with four treatment–control contrasts in the PCER initiative¹ and concluded that there was **not much evidence that Creative Curriculum and HighScope improved students' school-readiness skills more than teacher- or locally developed curriculum approaches.**
- Further analyses of these studies found **some evidence that comprehensive curricula sometimes have positive effects on the quality of classroom interactions and in some outcome domains** (e.g., Fantuzzo et al., 2011; Jenkins et al., 2018).
- Interestingly, a study using five different large-scale datasets found that **classroom scores on literacy, mathematics, and quality of interactions varied just as widely for classrooms using the two most widely used comprehensive curricula in public preschool programs—HighScope and Creative Curriculum—as for classrooms using no published curriculum** (Jenkins et al., 2019).

To what extent are domain-specific curricula evidence-based?

Domain-specific curricula have strong evidence of efficacy in comparison to comprehensive curriculum.

- Jenkins et al. (2018) compared curriculum effects with four different treatment-control contrasts in the PCER initiative¹ and concluded that, compared with Creative Curriculum and HighScope, the literacy- and mathematics-focused curricula had stronger evidence of improving student-level outcomes.
- In comparisons of domain-specific and comprehensive curricula, the evidence tends to show no difference in general interactions in the classroom but marked differences in instruction related to the skill-area targeted by the domain-specific curriculum and positive impacts on child learning in that area.
- Multiple studies have found that math-specific curricula lead to increased time on and quality of math-specific instruction in preschool classrooms and improved math learning (Clements et al., 2023; Jenkins et al., 2018; Mattera et al., 2018; Wakabayashi et al., 2020).
- The evidence is also clear that domain-specific curricula following a specific scope and sequence have generally been more successful in improving targeted child outcomes relative to comprehensive or teacher-created curricula (Clements et al., 2023; Jenkins et al., 2018; Mattera et al., 2018; Phillips et al., 2017b; Wakabayashi et al., 2020; Yoshikawa et al., 2013).
- Studies point to the potential for curricula, particularly some domain-specific curricula, to have greater effects for marginalized groups than for non marginalized groups.

What are options for high-quality pre-k curriculum adoption?

Option 1

Adopt evidence-based or promising research-based comprehensive curriculum

Option 2

Partner with curriculum developers to improve comprehensive pre-k curriculum quality or develop new comprehensive curriculum

Option 3

Supplement comprehensive curriculum with one or more domain-specific curriculum/a

Option 4

Support integrated implementation of multiple domain-specific curricula

“Evidence suggests that systematically combining different evidence-based, domain-specific curricula or integrating domain-specific curricula into comprehensive curriculum to support all domains of children’s learning may yield promising impacts on children’s learning.” [\(p. 3\)](#)

Option 1: Adopt Evidence-based or Promising Research-based Comprehensive Curriculum

States could consider...

- adopting Focus on Learning, a comprehensive curriculum for PK3-Grade 2 with evidence of efficacy ([see details here](#))
- adapting a research-based comprehensive curriculum (e.g. [Mississippi](#) and [Maine](#) adapted Focus on Learning)
- adopting a promising research-based comprehensive curriculum aligned with quality criteria (e.g. [Great First Eight](#))

Option 2: Partner with Curriculum Developers to Improve Comprehensive Curriculum Quality

States could consider...

- identifying needed curriculum improvements for widely used comprehensive pre-k curriculum and partnering with curriculum developers to implement and test improvements via research partnerships
- creating a new, research-based comprehensive curriculum (e.g. STREAMin3)

Option 3: Supplement Comprehensive Curriculum with One or More Domain-Specific Curriculum/a

States could consider...

- providing a supplemental literacy curriculum (e.g. Arkansas and Tennessee)
- providing a supplemental SEL curriculum (e.g. South Carolina)
- providing a supplemental math curriculum (e.g. DCPS and CAP Tulsa, which supplemented Creative Curriculum with Building Blocks)
- providing evidence-based vertically aligned PK-5 domain-specific curriculum (starting with PK) that could support and sustain children's learning gains in pre-k and elementary school and promote curriculum and instructional coherence

Option 4: Integrate Multiple Domain-Specific Curricula Coherently

States could consider...

- supporting the implementation of multiple evidence-based domain-specific curricula
 - e.g.: Boston's public preschool program combined two domain-specific curricula with strong evidence of effectiveness—a math curriculum called Building Blocks (Clements & Sarama, 2007) and a language- and literacy-focused curriculum called Opening the World of Learning (Schickedanz & Dickinson, 2005)—to support children's learning in those two domains (Weiland & Yoshikawa, 2013). Boston then developed its own comprehensive curriculum—Focus on Learning—based on Opening the World of Learning and Building Blocks for children age 3 to grade 2.)

How can multiple domain-specific curricula be implemented effectively?

The “strongest hope” model of domain-specific curriculum implementation includes:

Domain-specific curriculum

Intensive PD with at least bi-weekly coaching

Formative Assessment

With these key features:

- ✓ Focus on specific instructional content
- ✓ Inclusion of highly detailed scripts
- ✓ Incorporation of teacher voice
- ✓ Time for planning
- ✓ Use of real-time data
- ✓ Early childhood training for admins

Many teachers who use multiple domain- and skill-focused curricula say that managing so many curricula can be challenging:

“We have too much curriculum. We're doing Handwriting Without Tears. For math, we've adopted ST Math. We also have World of Wonders...Then we have Learning Without Tears and we have [more]. In my own mind, it's too much [curriculum]. It's so much stuff. We can't get through it.” - School-based Pre-K Teacher, 20 years experience, Bachelor's degree

“Adding another curriculum, ... it's really hard, especially if you're a new teacher. So, you're trying to get all this information about one curriculum. You're trying to learn how to write lesson plans. You're trying to figure out how you're going to follow the schedule. You're trying to learn ECERS too, because you're gonna get ECER'ed. You're having people in and out of your classroom. And then it's like, “Boom!” Here's another curriculum that you need to learn and master, and need to explain to parents.” - School-based Pre-K Teacher, 16 years experience, Master's degree

To what extent are comprehensive and domain-specific curricula currently used across state pre-k programs?

- Comprehensive curriculum are used widely across state pre-k programs.
- Most states that review and approve pre-k curriculum only review and approve comprehensive curriculum.
- Only 11 states review/approve and/or provide domain-specific supplemental curricula.

In practice, educators use a variety of approaches to curriculum content, including:

- Using one comprehensive curriculum,
- Using a domain-specific curriculum to supplement a comprehensive curriculum (e.g., HighScope supplemented by Numbers Plus math [Wakabayashi et al., 2020]), and
- Combining several domain-specific curricula.

To what extent are comprehensive and domain-specific curricula available to consider?



- **About half (n = 88) of the preschool curricula identified in the NASEM study literature review address multiple developmental domains—usually from four to eight domains.** Most comprehensive preschool curricula address the domains of literacy/language, mathematics, science, social-emotional learning, and the arts.
- **The other half of curricula identified in the literature review are domain specific, with nearly half of those focused on literacy and language.**
 - The second most common domain-specific curricula target SEL.
 - Few domain-specific curricula center on mathematics, science, social studies, or the arts.

To what extent are comprehensive and domain-specific curricula commercially available vs. freely available?

Very few preschool curricula are freely available.

- Two comprehensive curricula (CIRCLE Pre-K Curriculum and [Focus on Pre-K](#)) and two domain-specific curricula (Problem Solvers, a math curriculum, and Read It Again–PreK, a literacy curriculum) are offered for free in their digital format.¹
- [Great First Eight](#) is an OER comprehensive curriculum for infants and toddlers through Grade 2 that is freely available (aside from implementation and materials costs).
- [Early Learning Matters](#) provides freely accessible birth to age 5 curriculum resources.
- [Core Knowledge](#) provides freely accessible curriculum resources for ages 3-5.

Questions to Support Next Steps

The following questions can help guide a state's thinking about high-quality pre-k curriculum approaches:



- Is use of one comprehensive curriculum required? Is the state unlikely or unable to shift requirements for use of one comprehensive curriculum?
- To what extent can the state support implementation of a new comprehensive curriculum or one (or more) supplemental, domain-specific curriculum?
- Does the state have the capacity to support integrated implementation of multiple domain-specific curricula?
- What curriculum options are available and accessible, given funding or other constraints?
- What is the capacity and turnover of the ECE workforce?

Appendix

Pre-K Curriculum Usage Data

Creative Curriculum and HighScope are the pre-k curricula approved by the most states and are the most widely used

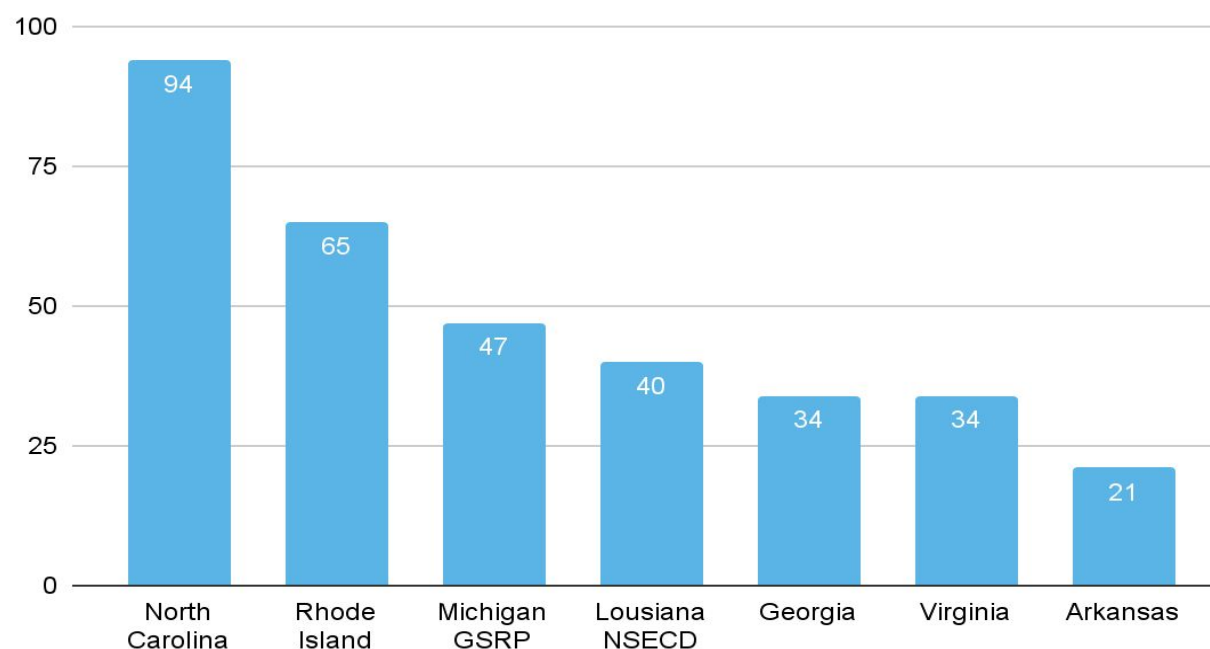
Creative Curriculum is the most used PK curriculum:

Data from Head Start programs and from a national sample of child care centers indicate that the most commonly used curriculum is the Creative Curriculum ([Hulsey et al., 2011](#); [Jenkins & Duncan, 2017](#)), despite its rating by the What Works Clearinghouse as having “No Discernable Effectiveness” in promoting school readiness ([U.S. Department of Education, 2013](#)).

HighScope is the second most used curriculum:

The second most commonly used curriculum is HighScope ([Hulsey et al., 2011](#); [Jenkins & Duncan, 2017](#)), whose rigorous evidence comes solely from the Perry Preschool study; a small, intensive demonstration program conducted in the 1960s with counterfactual conditions that no longer apply to the preschool population (i.e., children who did not attend center-based preschool; [Belfield, Nores, Barnett, & Schweinhart, 2006](#); [Duncan & Magnuson, 2013](#); [Schweinhart, 2005](#)).

Percentage of State Pre-K Programs Using Creative Curriculum
(Source: NIEER, 2021)



Pre-K Curriculum Efficacy Evidence: Focus on Learning

Six research studies to date have been published that document positive child outcomes associated with participation in BPS's pre-k program

Efficacy studies show that before implementing FoL, BPS pre-k enrollment was associated with strong learning gains that tended to fade in Kindergarten. Since implementing FoL, pre-k gains remained evident and persisted into elementary school. Collectively, these studies show the following outcomes of BPS's pre-k program, which is centered around Focus on Learning:

Positive child outcomes¹

- Moderate-to-large impacts on children's language, literacy, numeracy and mathematics skills, and small impacts on children's executive functioning and a measure of emotion recognition (some impacts were considerably larger for some subgroups)
- Children with special needs benefit from the program on par or more than than typically developing peers
- Large effects on BPS enrollment and persistence

More positive child outcomes as a result of (1) curriculum fidelity and (2) strong vertical alignment

- Content-rich instruction consistently predicted gains in mathematics skills
- Children who experienced strong instructional alignment across grades had faster gains in literacy and math skills, but there is also a lot of catch-up in kindergarten by non-attenders
- Associations between public pre-k and language, literacy, and math outcomes were more strongly sustained through the spring of kindergarten for unconstrained skills (vs constrained skills), compared to non-public pre-k

Efficacy studies on BPS Pre-K (2021-2024) when using FoL

Studies	Study Description	Outcomes/Efficacy Evidence
“Instructional alignment is associated with PreK persistence: Evidence from the Boston Public Schools” (2024) https://doi.org/10.1016/j.ecresq.2023.11.008	This study uses implementation fidelity data from PreK to 1st grade in the Boston Public Schools (BPS) to identify profiles of instructional alignment and examine whether stronger alignment for PreK attenders is associated with sustained benefits of BPS PreK on children’s language, literacy, and math skills through first grade. The study includes N = 498 students.	Children who experienced strong instructional alignment across grades had faster gains in literacy (SD = .47) and math (SD = .28) skills through the spring of first grade compared with non-BPS PreK attenders. Mis-alignment predicted faster convergence in literacy skills. Results highlight that both strong fidelity in PreK and better instructional alignment through elementary school may help to sustain the initial benefits of PreK programs through first grade in a subset of outcome domains.
“Content-rich instruction and cognitive demand in prek: using systematic observations to predict child gains” (2022) https://doi.org/10.1016/j.ecresq.2021.12.010	The study leveraged data from systematic observations of classrooms (N = 51) in public schools and community-based organizations implementing the Boston Public Schools prekindergarten program to create reliable measures of content-rich instruction and cognitive demand and explore associations between these constructs and gains in children's (N = 378) language and mathematics skills during PreK.	Content-rich instruction consistently predicted gains in mathematics skills during PreK. There were stronger, positive associations between both content-rich instruction and cognitive demand and gains in mathematics skills for children who started the year with stronger mathematics skills. Neither of the constructs predicted gains in language skills. There was no consistent evidence that associations between either of these constructs and gains in mathematics and language skills varied by children's race/ethnicity, socioeconomic status, or home language.
“Is skill type the key to the pre-K fadeout puzzle? Differential associations between enrollment in pre-K and constrained and unconstrained skills across kindergarten” (2021) https://doi/10.1111/cdev.13520	This study examines whether associations between enrollment in public PK in BPS and non-public PreK and children's (N = 508; Mage = 5.60 years in fall of kindergarten) math and language and literacy outcomes were more likely to be sustained through the spring of kindergarten for unconstrained versus constrained skills.	Associations between public PreK and language, literacy, and math outcomes were more strongly sustained through the spring of kindergarten for unconstrained skills, relative to constrained skills. Only associations between non-public PreK and unconstrained language skills were sustained through the spring of kindergarten. Associations in the fall of kindergarten differed by family income and dual language learner (DLL) status but there was no subgroup variation by the spring of kindergarten.

Efficacy studies on BPS Pre-K (2013-2020) using early version of FoL

Studies	Study Description	Outcomes/Efficacy Evidence
“The Effects of Enrolling in Oversubscribed Prekindergarten Programs Through Third Grade” (2020) https://doi.org/10.1111/cdev.13308	This study leverages naturally occurring lotteries for oversubscribed Boston Public Schools prekindergarten program sites between 2007 and 2011, for 3,182 children (M = 4.5 years old) to estimate the impacts of winning a first choice lottery and enrolling in Boston prekindergarten versus losing a first choice lottery and not enrolling on children’s enrollment and persistence in district schools, grade retention, special education placement, and third-grade test scores.	Large effects on BPS enrollment and persistence as a result of public pre-k participation, but no effects on other examined outcomes for the subsample. Importantly, children who competed for oversubscribed seats were not representative of all appliers and almost all control-group children attended center-based preschool.
“Impacts of the Boston Prekindergarten Program on the School Readiness of Young Children With Special Needs” (2016) https://doi.org/10.1037/dev0000168	This study examined the impacts of the Boston Public prekindergarten program on the language, literacy, mathematics, executive function, and emotional skills of young children with special needs (N = 242).	Children with special needs benefitted from the program in all examined domains. Effects were on par with or surpassed those of their typically developing peers.
“Impacts of a prekindergarten program on children’s mathematics, language, literacy, executive function, and emotional skills” (2013) https://www.jstor.org/stable/24029681	The study examined the impact of BPS pre-k program. Participants included 2,018 four and five-year-old children.	Findings indicated that the program had moderate-to-large impacts on children’s language, literacy, numeracy and mathematics skills, and small impacts on children’s executive functioning and a measure of emotion recognition. Some impacts were considerably larger for some subgroups.

State Levers of Change to Support High-Quality Pre-K Curriculum

What are the levers states can use to support use of high-quality preschool curriculum aligned with the new vision for preschool curriculum quality?

1 Curriculum Policy and Guidance

Assess alignment to consensus study and update pre-k curriculum policy and/or guidance to address areas of misalignment

2 Curriculum Review Processes

Assess alignment to consensus study and update pre-k curriculum review process to address areas of misalignment (or develop a pre-k curriculum review process in alignment with consensus study)

3 QIS/QRIS Curriculum Indicators

Assess alignment to consensus study and consider developing, adding, or modifying current QIS/QRIS curriculum indicators

4 Curriculum Incentives

Consider incentive mechanisms that could be put in place to encourage use of high-quality pre-k curriculum

5 Curriculum Implementation Supports

Consider how state-provided curriculum implementation supports could be modified to align with consensus study recommendations

Thank you

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