A Guide to Selecting High-Quality Preschool Curriculum

Based on the National Academy of Science's report, A New Vision for High-Quality Preschool Curriculum (2024)

In April 2024, the National Academies of Science, Engineering, and Medicine (NASEM) released a landmark study, A New Vision for High-Quality Preschool Curriculum.

The study represents the consensus vision of a diverse committee of experts in early childhood care and education (ECE). NASEM convened the committee to conduct a comprehensive study of preschool curriculum quality for children from ages three to five, with special attention to the needs of historically underserved communities, including Black and Latine children, multilingual learners, children with disabilities, and children experiencing poverty in the United States. Drawing upon an extensive literature review, the report synthesizes valuable insights from the latest empirical and theoretical research on what constitutes a high-quality preschool curriculum and offers actionable guidance on how to select and implement high-quality preschool curricula.

This document distills the findings and recommendations from the study to **provide guidance on identifying elements of quality in a preschool curriculum**. While the document is intended to be user friendly and concise, readers are encouraged to use the links provided throughout to learn more from the wealth of information provided in the study itself.

What's Inside

Section 2: How to Select High-Quality Preschool Curriculum	• How can states, districts, programs, and educators select high-quality preschool curriculum? • Framework for Evaluating Preschool Curriculum Quality
Section 3: Next Steps for Leaders	• How can leaders use the consensus study to support the selection of high-quality preschool curriculum? • What support is available to help the early learning field to use the consensus study?

What is a curriculum and why is using a curriculum important in preschool?

The report defines curriculum as "a cohesive set of principles, learning goals, intentional teaching strategies, activities, experiences, and materials designed to help children learn and thrive" (p. 51), which identifies "the content children are to learn [and] the goals for children's learning and development" (p. 113). The report further describes the curriculum as a critical support for educators, saying, "A well-planned, research-based, and preferably validated curriculum provides an essential scaffold that can guide early childhood educators on what to teach and when; how to engage children; and how to support adaptation for individual, cultural, and linguistic diversity. This scaffolding is particularly important if educators have had minimal teacher preparation; lack deep content knowledge; have little classroom support; or teach in classrooms in which the children have a wide range of abilities, cultures, and languages" (Preface, p. xix).

Identifying curriculum use "as a critical determinant of the quality and effectiveness of a preschool program" (Preface, p. xvii), the report notes that "curriculum has been shown in research to be a key ingredient in the quality of preschool programs (Burchinal et al., 2016; Institute of Medicine & National Research Council [NRC], 2015; NRC, 2009; Yoshikawa et al., 2013), and… is also an important building block in realizing the promise of preschool to improve developmental outcomes equitably, for all children (Engle et al., 2011; Magnuson et al., 2007; Melhuish et al., 2015; National Association for the Education of Young Children [NAEYC], 2019; Phillips et al., 2017; Yoshikawa et al., 2013). (p. 15)

Notably, the report defines curriculum as presenting both the "what and how" of children's learning, i.e., both the content of children's learning and the ways in which they can most effectively learn the content. This combination of content and pedagogy in the preschool curriculum, which is unlike many K-12 curriculum, reflects the science of early learning, indicating that young children's learning is grounded in caring and trusting interactions with adults who offer a joyful approach to the discovery of new knowledge and the mastery of new skills (p. 217-220).

What is the new vision for high-quality preschool curriculum?

"The committee's vision for high-quality preschool curricula aims to fulfill the promise of an education that fosters holistic and healthy development and learning for every child, regardless of place or socioeconomic status, and affirms children's full identities, including race, culture, home language, gender, and ability. It is grounded in an equity and justice-oriented perspective from inception to implementation and evaluation, and therefore is designed with an understanding of the diverse contexts of children's development, including adverse and traumatic conditions. Curricula aligned with the committee's vision would:

- Incorporate the perspectives, experiences, cultures, languages, strengths, and needs of a diverse range of children, families, and workforce settings;
- Include rich and meaningful content that centers child engagement and agency;
- Include well-designed learning experiences, intentional responsive teaching strategies, well-defined objectives and outcomes, embedded formative assessments, and differentiation based on understanding children's ability levels, cultural and linguistic backgrounds, interests, and dispositions;
- Have a scope and sequence that follow children's ways of thinking and learning with research-validated learning trajectories, are culturally and linguistically affirming, and include effective supports for children with disabilities; and
- Demonstrate effectiveness in yielding positive school and life outcomes for the children and families they are intended to reach." (p. 3)

What foundational understandings underlie the vision of high-quality preschool curriculum?

As foundational understandings, the study highlights several false dichotomies, commonly held in the ECE field, that are based on "either/or" thinking and calls for "resolving the tensions and complexities inherent in educational decisions [by] rejecting these false dichotomies and moving to both/and thinking (Bredekamp & Willer, 2022)" (p. 115).

For example, the first of these dichotomies is addressed with an extensive review of the spectrum of playful learning, highlighting the value of guided play that intentionally engages children in rich content across the multiple domains of their learning, including cognitive, social, and physical development. The report states, "Exploration and play have long been recognized as universal aspects of childhood as they are found in every culture that has been studied," while honoring "a rich literature documenting differences in the nature of play, the involvement of parents in play, and the amount of play children engage in depending on culture" (pp. 69 and 72).

The report further states, "Teaching academics is [often] pitted against developmentally appropriate practice, a view that underestimates children's competence and denies them challenging curriculum (Bredekamp & Joseph, 2024, p. 140; see also Sullivan et al., 2015). The key is to make academic content meaningful and engaging for young children, which is often not the case, particularly for children living in low-income communities and those who are members of historically marginalized groups (Adair & Colegrove, 2021; Boutte, 2024; Early et al., 2010; Malik et al., 2018; NASEM, 2023; Souto-Manning, 2018; Wright & Counsell, 2018)" (p. 114).

> *"Teaching academics is [often] pitted against developmentally appropriate practice, a view that underestimates children's competence and denies them challenging curriculum.*

The report also highlights the need for a curriculum that supports intentional teaching practices, drawing from a scope and sequence, that simultaneously promote children's agency and respond to their strengths, interests, abilities, and lived experiences. The report notes, "Differential access to autonomy-granting, play-based pedagogy in early education is potentially harmful, and typically rooted in stereotypes about weaknesses of children and their families instead of being attributed

to systemic factors that contribute to group differences, such as differential opportunities to learn (Adair, 2015; Adair & Colegrove, 2021; Adair et al., 2017; NASEM, 2023)" (p. 77).

What key elements constitute a high-quality preschool curriculum?

With the understanding of false dichotomies in mind, the reports identifies key elements of high-quality preschool curricula:

1. Research-based
2. Evidence-based for child outcomes
3. Includes scope and sequence
4. Focuses across developmental domains and content areas or coherently incorporates domain-specific curriculum
5. Covers content and learning domains in depth
6. Clearly defines specific developmentally appropriate learning goals
7. Includes well-designed learning experiences and interactions
8. Emphasizes responsive, intentional teaching
9. Provides guidance to prepare developmentally appropriate, engaging learning environments, materials, and schedules
10. Supports culturally relevant, responsive, and sustaining teaching and learning
11. Supports multilingual learners and various language systems
12. Provides individuation and effective supports for children with identified disabilities
13. Supports individualized instruction for every child
14. Supports family engagement
15. Includes ongoing assessment tools and strategies aligned with goals and experiences
16. Provides professional development
17. Includes multiple modes of learning
18. Supports positive interactions
19. Uses a strength-based/asset-based approach
20. Emphasizes playful learning and guided play
21. Prioritizes child engagement and agency
22. Balances constrained and non-constrained skills
23. Anti-bias, anti-racist, and equitable approach
24. Includes teacher educative content
25. Usable, accessible, and supports implementation with fidelity
26. Uses technology appropriately
27. Leverages appropriate curriculum developers' expertise
28. Horizontally and vertically aligned
29. Provides appropriate approaches for Indigenous communities

Supplementary domain- and content-focused guidance:

30. Social and emotional learning
31. Executive functioning
32. Language and literacy
33. Math
34. Science and engineering learning
35. Other domains

Why is attention to pre-k curriculum quality important now?

As states have sought to broaden access to high-quality preschool programs, the science of early learning has advanced to indicate the critical importance of children's early learning and development. Simply stated, "The early developmental period is recognized as the most important developmental phase of the lifespan, during which the young child's experiences and exposures sculpt the brain to ready it for learning and positive adaptation," (p. 66). The report explains, "The existence of sensitive periods and related high neuroplasticity during the early years of life represent a window of opportunity for enhancing early learning, as specific skills and abilities are known to be absorbed or learned more readily during these periods. In turn, because learning is a cumulative process, enhanced early learning can lead to long-term learning benefits. In contrast, when opportunities for environmental stimulation and expected experiential inputs are missed, the early years can be a period of unique vulnerability and can lead to learning challenges at later developmental periods," (p. 65).

The need to nurture young children's curiosity and learning effectively during this window of opportunity makes the use of high-quality curriculum a critical component of preschool programs. Yet, the report asserts, "Thus far, the large evidence base on preschool curricula appears to have had little influence on the curriculum choices of public preschool programs. For example, [many] programs overwhelmingly use comprehensive curricula that, compared with domain-specific curricula, have been found to have smaller gains in domain-targeted academic skills (Jenkins & Duncan, 2017). A key challenge in moving the field forward on a new vision for curriculum that reflects the developmental strengths of children and families and is more inclusive of cultural and linguistic variations—particularly for the children with the least access to opportunity—is developing policy levers for curriculum choice and use that are more closely tied to the evidence base," (p. 59).

The report notes important gaps in our knowledge of what constitutes a high-quality curriculum. For example, "To date, most evaluation studies of curricula have not assessed important outcomes such as development of children's creativity, positive identity, curiosity, and emergent multilingualism." (p. S-9) Moreover, "There has been almost no rigorous research on preschool curriculum in family child care homes, for-profit preschools, faith-based schools, or charter schools." (p. 58) The committee acknowledged, "Although this report is highly evidence-based, [we] confronted the reality of the difficulty of finding research conducted on specific components of curriculum essential to achieving equity, such as cultural and linguistic relevance." Even so, the report synthesizes a broad and deep research literature that informs the committee's consensus definition of high-quality preschool curriculum and guidance on its effective implementation. The committee's vision thus comes at a moment when states with varied policy and political contexts are actively seeking to broaden access to quality preschool programs, just as the science of early learning points to the importance of selecting and using effective preschool curricula.

"Many public programs are using curricula that do not meet the needs of all children. There is compelling evidence that access to high-quality early learning experiences may be limited and inadequate based on factors such as a child's race, location, gender, home language, disability status, and socioeconomic status." (p. 377)

How can states, districts, programs, and educators select appropriate high-quality preschool curriculum?

Step 1 Identify Program and Student Needs

Different curriculum approaches may be more (or less) appropriate for addressing students' developmental and learning goals. In these cases, the program administrator's goal is not to select a preschool curriculum that is the most effective "on average," but to identify the curriculum that is most effective for their specific students and context. For example, educators who have children with disabilities in their classrooms may need curricula that address the unique learning needs of their specific students (p. 362). For programs that are selecting a curriculum for the first time or those that have been using a curriculum and are looking to make a change (e.g. changing the core curriculum used or supplementing the current curriculum used), it will be helpful to clearly articulate the program and student needs that form the rationale for selecting a new curriculum, and to engage teachers and families in the process of identifying needs that should be met and prioritized in any new curriculum. Questions to assess program and student needs may include questions such as:

- Do you need curriculum materials designed to support multilingual learners? In which languages?
- What are challenges or gaps in current curriculum reflected in student data and teacher and family feedback?

Step 2 Create a short-list of possible curricular options

Of the curricula that are available, consider which of these curricula meet the basic requirements of your program and students. To create a short-list of viable curriculum options, you may consider questions such as the following:

- What ages do you need to serve through curriculum materials? (e.g. 0-5, 3-year-olds, 4-year-olds, 3 and 4-year-olds in mixed age classrooms)
- Are you looking for a new comprehensive curriculum, to supplement use of your current comprehensive curriculum with one or more domain-specific curricula, or for a set of domain-specific curricula to be implemented in an integrated way?

- What curriculum product components do you need/want from the curriculum supplier? (e.g. curriculum materials, formative assessment, professional learning, online tools, etc.)
- What is your budget?
- What curriculum features will best meet the needs of your early childhood educators? (e.g. curriculum that offer detailed lesson guides and have a complete range of professional development offerings may be a better fit for programs with less experienced early childhood educators)
- Do you need a vertically aligned curriculum? (e.g. 0-5,PK-K or PK-1, -2, or -3, etc.)
- What curriculum philosophy is aligned with your program? (The committee found that the most frequently cited underpinnings of curricula are "inquiry-based," "project-based," and "play-based." - p. 30)

Step 3 Consider the Quality of Preschool Curriculum

Once a list of viable curriculum options that would satisfy basic requirements is created, the quality of these options can be considered. Elements of quality discussed in the report include the following:

1. Research-based
2. Evidence-based for child outcomes
3. Includes scope and sequence
4. Focuses across developmental domains and content areas or coherently incorporates domain-specific curriculum
5. Covers content and learning domains in depth
6. Clearly defines specific developmentally appropriate learning goals
7. Includes well-designed learning experiences and interactions
8. Emphasizes responsive, intentional teaching
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A summary of elements of preschool curriculum quality, definitions, and guiding questions to support curriculum selection.

The table below offers a framework for identifying elements of curriculum quality and a set of questions to inform decision-making. While all elements of quality should be considered, programs may choose to prioritize certain elements in ways that best serve their population of children and families. Importantly, the amount of content offered below for each element, drawn from the consensus study, is not necessarily an indicator of its greater or lesser importance in evaluating curriculum quality. Accordingly, each element in the table contains links to relevant material in the study and the reader is encouraged to use these links to find further elaboration on each.

Note: As discussed in the consensus study, many if not most curricula options may not fully demonstrate all of the elements of quality. Different curricula will also vary in the extent to which they demonstrate each element of quality. In this context, and given that the particular curriculum needs of teachers, children, and families should inform curriculum decisions, any evaluation of curricular options will likely involve setting priorities. As curriculum options are considered, weighing the extent to which a curriculum demonstrates each element of quality is therefore encouraged.

Elements of Curriculum Quality and Report Sources	Description of Elements of Curriculum Quality	Questions to Ask When Considering Elements of Curriculum Quality
1 **Research-based** *Report sources: 96, 127*	Research-based curricula are grounded in the science of early childhood development and learning. The following core concepts, based in the science of early childhood development and learning, are critical for informing the development of preschool curricula: • The interaction of the brain, biology, and environments shapes early childhood development and learning. • The early caregiving environment, exposure to trauma and stress, and access to resources affect long-term development.	• To what extent is the curriculum based on current research on content and teaching practices that support children's development and learning? • To what extent are essential principles of how children develop and learn reflected in the curriculum's philosophy and planned experiences?

Elements of Curriculum Quality and Report Sources	Description of Elements of Curriculum Quality	Questions to Ask When Considering Elements of Curriculum Quality
	• Children learn in multiple ways—through active exploration; through observation of others, notably older children and adults; and through adults' explicitly sharing knowledge with them. • Children learn from play, exploration, and pedagogy that are responsive to their interests. Children's play has the potential to contribute to the cultural relevance of early education, as child-initiated play reflects children's cultural experiences and how they see themselves within the larger society, providing teachers with an important lens into their lived experiences. • Young children play an important role in their interactions and development and are active participants in sharing knowledge. Autonomy-granting, play-based pedagogy in early education builds advanced language and thinking skills as well as skills that involve pursuing learning in which young children are interested and collaborating and conversing with other children.	

Elements of Curriculum Quality and Report Sources	Description of Elements of Curriculum Quality	Questions to Ask When Considering Elements of Curriculum Quality
2 **Evidence-based for child outcomes** *Report sources:* xix, 4, 7, 12, 54, 127, 392, 393	Evidence-based curricula demonstrate effectiveness in yielding positive school and life outcomes for the children and families they are intended to reach (via rigorous independent research studies). • Determining whether curricula are effective requires establishing valid comparisons of outcomes from children who are participating in the curriculum and those in alternative conditions (e.g., control groups). These comparisons must reflect real-world settings encountered by program administrators, educators, and parents. • Curriculum publishers should provide rigorous and meaningful evidence of improved short- and long-term academic and developmental outcomes for all children, with particular attention to Black, Latine, Indigenous, Asian, and Pacific Islander children; multilingual learners; children with disabilities; and children living in poverty. • Curriculum should have an evidence base that demonstrates effectiveness in varied contexts.	• To what extent has the curriculum been rigorously tested for efficacy (via independent research studies with control or comparison groups)? • To what extent is there evidence of short- and long-term learning and developmental outcomes? • To what extent is there evidence of learning and developmental outcomes for children of racially, ethnically, linguistically, culturally, and socioeconomically diverse backgrounds (and specifically Black, Latine, Indigenous, Asian, and Pacific Islander children; multilingual children; children with disabilities; and children living in poverty)? • To what extent is there evidence of curriculum effectiveness in varied contexts?

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3
 	
Includes scope and sequence
 	
Report sources: 4, 7, 51, 52, 124
	The curriculum includes or guides activities to be carried out in a particular order, matching children's developmental trajectories for each of the domains covered by the curriculum.
	
	• Content areas and developmental domains—including social, emotional, and physical—need to be addressed systematically and sequentially (Burchinal et al., 2022; Clements, 2007).
	
	• The report discusses research related to scope and sequence for the following domains and content areas:
	  ○ Literacy and Language
	  ○ Math learning trajectories; Mathematics
	  ○ Science and Engineering
	  ○ Social and Emotional Development
	
	• 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).
		• To what extent does the curriculum provide an organized framework and sequence to guide teachers' decision-making regarding the content and progression of children's development and learning?
		
		• To what extent does the curriculum have a scope and sequence for each domain covered that follows children's ways of thinking and learning with research-validated learning trajectories?
		
		• If teachers are intended to choose the order of curriculum activities, to what extent are teachers offered guidance on how to implement activities based on research-validated learning trajectories?
		
		For mixed age classrooms/programs:
		
		• To what extent does the curriculum offer guidance in adapting curriculum or sequencing content for mixed-age groups?

Elements of Curriculum Quality and Report Sources	Description of Elements of Curriculum Quality	Questions to Ask When Considering Elements of Curriculum Quality
4 **Focuses across developmental domains and content areas or coherently incorporates domain-specific curriculum** *Report sources:* 118, 127, 141, 142, 143, 159, 381	Curricula must promote growth and achievement in all content and developmental domains, as well as children's positive self-identity, sense of belonging, and agency across domains (Wagner, 2023). • High-quality curricula (whether comprehensive or combinations of curricula) are intentional and purposeful in addressing goals in all developmental and content domains, including multiple, developmentally sequenced experiences to both support new learning and reinforce and expand previously acquired competencies (Diamond et al., 2013). • Teaching content is necessary for teaching the "whole child." • High-quality curricula are developed with attention to all content domains, even if they are domain-specific. • 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.	• To what extent does the curriculum or combination of curricula together address "the whole child"—all domains of development (cognitive, social, emotional, language, and physical)—and content areas, such as literacy, mathematics, science, social studies, health and physical education, and the arts? • To what extent is the curriculum content intentional and purposeful in addressing goals in all developmental and content domains, including multiple, developmentally sequenced experiences to both support new learning and reinforce and expand previously acquired competencies?

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5 **Covers content and learning domains in depth** *Report sources: 4, 6, 7, 118, 127, 141, 142, 143, 159, 381*	High-quality curricula should provide guidance for content-specific teaching, rich, meaningful, and varied learning experiences, and supports for all aspects of children's development (including linguistic and cultural adaptations). • Content learning can occur in ways that are aligned with developmentally appropriate practice (National Association for the Education of Young Children [NAEYC], 2022) and can include opportunities for play and playful activities (Hirsh-Pasek et al., 2009; Weisberg et al., 2015; Zosh et al., 2018). Research points to the importance of intentional teaching for children aged 3–5 years (Burchinal et al., 2022). • Effective teaching of content is based on an understanding of children's thinking and learning (see Chapter 3). For STEM, for example, teachers using curricula that include scientific kits and materials are more likely to teach accurate content (National Academies, 2022; Nowicki et al., 2013). As another example, teachers' modeling of math materials before an activity or transition is more effective than following general class organization suggestions (Moffett et al., 2021). • Because content knowledge is often removed from children's direct, cultural experiences, pre-k curriculum is typically organized conceptually. Conceptual organizers can make content knowledge more meaningful, engaging, and understandable for young children, particularly for children from culturally and linguistically minoritized groups.	• To what extent does the curriculum include progressive steps and individual learning experiences that support teachers' coverage of content in depth? • For each domain covered by the curriculum, to what extent is there a progression of activities and experiences that appears to increase the level of challenge and complexity of skills and knowledge? • To what extent are children given opportunities in the curriculum to use skills they have mastered in more complex ways? To what extent are children given opportunities to expand their knowledge in new and more complex ways? • To what extent does the curriculum include guidance for content-specific teaching, rich and varied learning experiences, and supports for all aspects of children's development (including linguistic and cultural adaptations)? • To what extent does the curriculum include "academic" content that is meaningful and engaging for young children? • To what extent is the curriculum organized

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	• In many instances, teaching academics is pitted against developmentally appropriate practice, a view that underestimates children's competence and denies them challenging curriculum (Bredekamp & Joseph, 2024, p. 140; see also Sullivan et al., 2015). The key is to make academic content meaningful and engaging for young children, which is often not the case, particularly for children living in low-income communities and those who are members of historically marginalized groups (Adair & Colegrove, 2021; Boutte, 2024; Early et al., 2010; Malik et al., 2018; NASEM, 2023; Souto-Manning, 2018; Wright & Counsell, 2018). • Frequently used general approaches to curriculum implementation—including the project approach (Helm & Katz, 2016; Katz et al., 2014), the Reggio Emilia approach, the Cycle of Inquiry (Broderick & Hong, 2020; Edwards et al., 1993, 2012; Rinaldi, 2021), and learning trajectories approaches—represent ways of conceptually organizing and deeply engaging children with curriculum content.	conceptually (such as through a project approach, Reggio Emilia approach, Cycle of Inquiry approach, and learning trajectories approach) to make content knowledge more meaningful, engaging, and understandable for young children, particularly for children from culturally and linguistically minoritized groups?

Elements of Curriculum Quality and Report Sources	Description of Elements of Curriculum Quality	Questions to Ask When Considering Elements of Curriculum Quality
6 **Clearly defines specific developmentally appropriate learning goals** *Report sources:* 4, 7	High-quality curricula provide well-defined objectives and outcomes, and developmentally appropriate learning goals. • Goals for all domains encompass concepts; procedures; information and facts; productive disposition; practices such as problem solving, problem posing, and investigation; and transfer to other domains, including social-emotional development, executive function and self-regulation, learning to learn, and approaches to learning.	• To what extent does the curriculum address clearly defined objectives and outcomes, such as the standards of the disciplines (e.g., mathematics, literacy, science) and/or the state or Head Start early learning standards? • To what extent are the goals reasonable expectations for most 3- to 5-year-old children? • To what extent do the goals for all domains encompass concepts; procedures; information and facts; productive disposition; and practices such as problem solving, problem posing, and investigation? • To what extent do domain-specific goals support learning and development in other domains, including social-emotional development, executive function and self-regulation, learning to learn, and approaches to learning?

Elements of Curriculum Quality and Report Sources	Description of Elements of Curriculum Quality	Questions to Ask When Considering Elements of Curriculum Quality
7 **Includes well-designed learning experiences and interactions** *Report sources:* xix, 4, 7, 124, 127, 167, 176, 224	High-quality curricula include guidance on what to teach and when, and how to engage children. • Curricula can support teachers in ensuring that classroom experiences promote learning and development and minimize time wasted in passive experiences, such as waiting during transitions between activities (Early et al., 2010; La Paro et al., 2009). • At the classroom level, consistent routines and predictable, proactively implemented expectations for behavior serve to assure children of their safety and security, and enable them gradually to regulate their own behavior, including learning to pay attention despite distractions and follow increasingly complex instructions that facilitate learning. To the extent that these routines and expectations draw on the diversity of children's experiences, backgrounds, languages, and funds of knowledge, all children's sense of belonging will be enhanced.	• To what extent does the curriculum provide opportunities for children to be active and engaged both mentally and physically? • To what extent does the curriculum include guidance on what to teach and when, and how to engage children? • To what extent does the curriculum minimize time wasted in passive experiences, such as waiting during transitions between activities? • To what extent does the curriculum include consistent routines and predictable, proactively implemented expectations for behavior that draw on the diversity of children's experiences, backgrounds, languages, and funds of knowledge?

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8 **Emphasizes responsive, intentional teaching** *Report sources: 4, 142*	High-quality curricula support teaching content to young children mainly in playful contexts, ranging from intentional small- and large-group and individual work, to everyday routines, to child-initiated play and teachable moments (Diamond et al., 2013). Content instruction includes both incidental and intentional approaches. • Curriculum developers [should] consider the goals, the children, and the range of teaching approaches to determine pedagogical practices (Burchinal et al., 2022). For example, naturalistic language scaffolding embedded in play and everyday routines positively supports children's receptive and expressive language development, especially for children with disabilities (e.g., Schreibman et al., 2015).	• To what extent do learning experiences include both child-focused exploration and investigation and teacher-guided instruction? • To what extent is the curriculum responsive to children's strengths and interests? • To what extent does the curriculum promote positive interactions among teachers and children? • To what extent does teaching take place mainly in playful contexts, ranging from intentional small- and large-group and individual work, to everyday routines, to child-initiated play and teachable moments?

Elements of Curriculum Quality and Report Sources	Description of Elements of Curriculum Quality	Questions to Ask When Considering Elements of Curriculum Quality
9 **Provides guidance to prepare developmentally appropriate, engaging learning environments, materials, and schedules** *Report sources:* 26, 74, 120, 127, 140	A developmentally appropriate, well-equipped, culturally responsive environment is essential to protect children's health and safety and promote optimum learning (p. 1-9). Teaching and learning subject matter requires curriculum materials that build toward a vision of excellence; are true to the subject, developmentally appropriate, and engaging; and are supported by evidence of their success (Bohart & Procopio, 2022; Clements & Sarama, 2002a; National Academies, 2022; Nyisztor & Marcus, 2008). • Intentional teaching, including scheduled, sequenced lessons emphasizing small group work, develops preschoolers' social problem-solving (Burchinal et al., 2022), ability to identify and discuss feelings, use verbal mediation, teaching social and emotional skills, including individualized interventions for children with challenging behaviors (especially those that use functional assessment of the relation between the challenging behaviors and the child's environment and that adapt the environment, Dunlap et al., 2006). (p. 4-25) • Play activities support knowledge of mathematical language and thinking, and notably, play with a variety of materials provides opportunities to think about spatial relationships and patterns, either imagined or built; to compare magnitudes and shapes; and to enumerate sets (Eason et al., Levine, 2022; Eason et al., 2021; Fisher et al., 2013; Ramani & Siegler, 2008; Seo & Ginsburg, 2004; Siegler & Ramani, 2008). (p. 3-8)	• To what extent is there guidance on organizing the environment, including the use of diverse learning contexts designed to meet important, meaningful goals—such as centers, small and large groups, and individual experiences? • To what extent is there guidance on age-appropriate and culturally and linguistically relevant books, equipment, and materials for children and teachers that are flexible to support children' interests and progress over time? • To what extent does the curriculum provide flexible guidance on daily, weekly, and/or monthly schedules?

Elements of Curriculum Quality and Report Sources	Description of Elements of Curriculum Quality	Questions to Ask When Considering Elements of Curriculum Quality
	• An essential component of equity-driven preschool classrooms is the provision of culturally and linguistically responsive, relevant, and affirming educational materials. Such curriculum materials are necessary if educators are to provide equity-focused teaching and learning experiences for all children. (p. 4-7) • High-quality curricula provide flexible guidance on daily, weekly, and/or monthly schedules (p. 4-14)	
10 **Supports culturally relevant, responsive, and sustaining teaching and learning** *Report sources: 4, 39, 94, 95, 117, 118, 120, 122, 127, 237, 239*	High-quality curricula provide guidance on how to support adaptation for individual, cultural, and linguistic diversity. This scaffolding is particularly important if educators have had minimal teacher preparation; lack deep content knowledge; have little classroom support; or teach in classrooms in which the children have a wide range of abilities, cultures, and languages. • Culturally relevant, responsive, and sustaining curriculum: ○ incorporates the perspectives, experiences, cultures, languages, strengths, and needs of a diverse range of children, families, and workforce settings, ○ is culturally and linguistically affirming, ○ provides guidance for teachers on how to adapt lessons and materials to children's diverse home culture and languages, and ○ includes specific strategies to help teachers interact	• To what extent does the curriculum incorporate the perspectives, experiences, cultures, languages, strengths, and needs of a diverse range of children, families, and workforce settings? • To what extent does the curriculum promote an asset-based approach, recognizing that all development and learning is a product of cultural experiences? • To what extent is the curriculum culturally and linguistically affirming, building on children's prior knowledge and competence acquired in their families and communities? • To what extent does the curriculum provide

Elements of Curriculum Quality and Report Sources	Description of Elements of Curriculum Quality	Questions to Ask When Considering Elements of Curriculum Quality
	with children and their families, create culturally responsive learning experiences, and use relevant instructional resources. • Cultural responsiveness is made visible in the classroom through classroom materials (e.g., images and resources representative of the children in the classroom and the wider world, nursery rhymes and music from around the world), processes (i.e., providing children with background information so they can interact meaningfully with instructional content), and products (i.e., making children's learning visible to highlight diverse cultural understandings and experiences). • Culturally responsive classrooms adopt an asset-based approach that draws on children's cultures, languages, abilities, and experiences to make learning meaningful and relevant; help build positive and healthy racial, ethnic, and linguistic identity; support inclusive classroom practices; and help children achieve success in school (Ladson-Billings, 1995b).... For young children, learning is acquired primarily in the social, cultural, and linguistic contexts of their families and communities. By valuing and embracing a multiplicity of cultural and linguistic assets—including both culturally grounded content and values—students' feeling of belonging and connectedness to school will be strengthened, as will engagement and motivation to learn (Armstrong, 2022; Byrd, 2016; Krasnoff, 2016). • It is essential to recognize and understand young children's	guidance for teachers on how to adapt lessons and materials to children's diverse home cultures and languages? • To what extent does the curriculum include specific strategies to help teachers interact with children and their families, create culturally responsive learning experiences, and use relevant instructional resources? • Does the curriculum include both culturally grounded content and values in ways that strengthen students' feeling of belonging and connectedness to school? • To what extent is cultural responsiveness made visible in the classroom through classroom materials (e.g., images and resources representative of the children in the classroom and the wider world, nursery rhymes and music from around the world), processes (i.e., providing children with background information so they can interact meaningfully with instructional content), and products (i.e., making children's learning visible to highlight diverse cultural understandings and experiences)? • Does the curriculum serve as a scaffold for

Elements of Curriculum Quality and Report Sources	Description of Elements of Curriculum Quality	Questions to Ask When Considering Elements of Curriculum Quality
	lived experiences and not limit their learning experiences in early education settings based on stereotypes about their cultural or linguistic groups. Doing so entails celebrating, discussing, and incorporating the diversity of experiences, languages, and cultures that children bring to the early education setting and to the implementation of curricula. • Different cultural groups' and individuals' ways of understanding and building knowledge are not only valid but may also be complementary. • Although interactive book reading is one of the most effective ways to promote young children's language learning and early literacy (Institute of Education Sciences [IES], 2007; Zucker et al., 2013), the quality and cultural relevance of the materials matter. [For example,] Rudine Sims Bishop (1990) first identified the critical need for books and curriculum materials that, metaphorically, provide children with "mirrors, windows, and sliding glass doors." (read more here) • Children from historically marginalized groups, especially those who are Black, Indigenous, and Latine, need books and materials with positive images that counteract the racism, stereotypes, and biases they experience every day. • Actively incorporating cultural competence into curriculum and cultivating partnerships with families can help bridge the gap between a child's home environment and educational setting. Such an approach acknowledges the	teachers to move from theoretical to practical understanding of cultural and linguistic responsiveness and anti-bias education? • To what extent do books and curriculum materials provide children with "mirrors, windows, and sliding glass doors"? (further described here)

Elements of Curriculum Quality and Report Sources	Description of Elements of Curriculum Quality	Questions to Ask When Considering Elements of Curriculum Quality
	diverse cultural and linguistic backgrounds of children and the potential influence these backgrounds have on receptivity to various pedagogical approaches. For example, some communities may emphasize child-directed play while others may emphasize more indirect approaches such as observation without direct involvement.	
11 **Supports multilingual learners and various language systems** *Report sources:* xviii, 6, 8, 120, 275, 289, 290, 292, 293, 296, 298, 300, 301, 303, 304, 305, 310, 311, 312	High-quality curricula address the specific strengths and needs of multilingual learners and promote emergent bilingualism as an equitable goal for children who speak a language other than English or in addition to English in the home. • Curricula should implement the most effective language model for multilingual learners – teaching them English systematically while actively supporting their home language development. • Curricula and supporting materials should be provided in Spanish, English, and other languages commonly spoken by children with a home language other than English. • A critical first step in providing equitable, high-quality early care and education for multilingual learners is to recognize and build upon their linguistic, cultural, and social assets and talents. • Curricula should include adaptations of instructional practices that scaffold language development and comprehension, as well as materials and learning experiences that accurately reflect and build on the cultures	• Is emergent bilingualism for multilingual learners a goal? • To what extent are curriculum and supporting materials provided in Spanish, English, and other languages commonly spoken by children with a home language other than English? • To what extent does the curriculum guide adaptations of instructional practices that scaffold language development and comprehension, in both English and multilingual children's home language, as well as materials and learning experiences that accurately reflect and build on the cultures and languages of multilingual children and their families? For example, does the curriculum provide multiple methods of communicating meanings of words – such as hand or body gestures,

Elements of Curriculum Quality and Report Sources	Description of Elements of Curriculum Quality	Questions to Ask When Considering Elements of Curriculum Quality
	and languages of multilingual children and their families. • Multilingual learners benefit from frequent, responsive, and enriched language interactions. Early, balanced exposure to dual languages, with at least 40% of the time dedicated to each language, is linked to high proficiency in both languages and improved long-term academic achievement for multilingual learners. • Curricula centered around child-led activities, which support children's agency and allow them to make decisions and explore their environments, are associated with greater social, language, and academic gains for multilingual learners than other types of curricula (Alamillo et al., 2016; Ansari & Winsler, 2014; Rodriguez et al., 2003). • Simultaneously, there should be a concentrated effort on cultivating early literacy skills, prioritizing the enhancement of oral language and vocabulary development for young learners who are multilingual. • High-quality curricula include appropriate ongoing assessment instruments and methods for monitoring growth in both languages (National Academies, 2017). • One consistent finding across many studies is that all young children benefit from early learning opportunities that support emergent bilingualism; therefore, early education goals can be strengthened by immediately including bilingualism as an explicit goal for multilingual learners and	pictorial representations, concrete objects from everyday life – and connect instructional content to children's cultural backgrounds and family traditions? • To what extent does the curriculum supply books and environmental texts (such as labels) in the native languages of students, along with educational and play resources (such as dolls and food items) that reflect the diverse backgrounds of multilingual learners? • To what extent are learning experiences in multilingual learners' home language(s) and English balanced (e.g. at least 40% of learning dedicated to each language)? • To what extent does the curriculum center around child-led activities, which support children's agency and allow them to make decisions and explore their environments? • To what extent does the curriculum include tools and methods for monitoring growth in both home languages and English? • To what extent does the curriculum support partnering with families to collaboratively develop language goals and integrating

Elements of Curriculum Quality and Report Sources	Description of Elements of Curriculum Quality	Questions to Ask When Considering Elements of Curriculum Quality
	eventually expanding to all children. • High-quality curricula support partnerships with families to collaboratively develop language goals and integrate vocabulary, customs, values, and home languages into classroom routines. • In classrooms serving multilingual learners, where the primary goal is English with some support for home language, high-quality curricula: ○ Supply books and environmental text, such as labels, in the native languages of students, along with educational and play resources (such as dolls and food items) that reflect the diverse backgrounds of multilingual learners. ○ Prepare educators with basic words and phrases, such as greetings, in the multilingual learners' home languages and singing songs and chants in children's home languages (Espinosa & Crandell, 2020). ○ Use multiple methods of communicating meanings of words—such as hand and body gestures, pictorial representations, concrete objects or realia—and connecting instructional content to children's cultural backgrounds and family traditions (Brodziak de los Reyes et al., 2022; National Academies, 2017). ○ Provide opportunities for multilingual learners to interact with their English-speaking peers during open-ended activities and Spanish-speaking peers during teacher-led small-group activities (Espinosa & Crandell, 2020).	vocabulary, customs, values, and home languages into classroom routines? • To what extent does the curriculum prepare educators with basic words and phrases, such as greetings, in the multilingual learners' home languages and singing songs and chants in children's home languages? • To what extent does the curriculum have frequent, responsive, and enriched language interactions (e.g. posing interesting questions, engaging in turn taking in extended conversations, exposure to vocabulary that is rich in content and contains diverse sentence structures)? • To what extent does the curriculum provide opportunities for multilingual learners to interact with English-speaking peers during open-ended activities and same-language speaking peers during teacher-led small group activities? • To what extent does the curriculum encourage multilingual preschoolers to use all of their linguistic knowledge when communicating (e.g., emphasizing the content of the interaction and not discouraging multilingual learners from

Elements of Curriculum Quality and Report Sources	Description of Elements of Curriculum Quality	Questions to Ask When Considering Elements of Curriculum Quality
	○ Encourage multilingual preschoolers to use all of their linguistic knowledge when communicating (e.g., emphasize the content of the interaction and do not discourage multilingual learners from using their home language throughout the day).	using their home language throughout the day)? • To what extent does the curriculum include a concentrated effort on cultivating early literacy skills, prioritizing the enhancement of oral language and vocabulary development, offering immersive and compelling language encounters in both English and multilingual learners' language(s), for young learners who are multilingual? • Does the curriculum reflect norms and learning trajectories for language and literacy development of multilingual learners (different from those based on children who speak English)? • To what extent does the curriculum include tools and methods for collecting important contextual information about multilingual learners (e.g., age of acquisition of each language, extent and nature of exposure to each language, and key family characteristics) as well as family histories that go beyond the typical home language survey? • To what extent does the curriculum support

Elements of Curriculum Quality and Report Sources	Description of Elements of Curriculum Quality	Questions to Ask When Considering Elements of Curriculum Quality
		early childhood educators to understand the benefits of early bi- and multilingualism and view the development of multilingual learners through the lens of the powerful advantages of having more than one language instead of viewing these children as deficient because of limited English skills?
12 **Provides individuation and effective supports for children with identified disabilities** *Report sources:* xviii, 4, 9, 119, 253, 255, 259, 261, 262, 263, 270, 389	High-quality curricula are designed for inclusive settings with evidence-based adaptations and accommodations embedded throughout to facilitate the active engagement and learning of children with disabilities. They provide scaffolded supports that increase opportunities for effectively integrating children with disabilities in general education early childhood settings while effectively meeting their unique developmental needs and fostering healthy peer relationships. • Children with disabilities need individualized, tailored goals and may require specialized adaptations and supports, unique resources, specific teacher competencies, and increased levels of complexity. • High-quality curricula include and provide support for teachers taking a blended approach—integrating practices that address the needs of all children in inclusive settings. That is, the needs of individual children with disabilities are integrated into the classroom's activities and routines so that all children can be meaningfully included in each	• To what extent does the curriculum provide for evidence-based adaptations, accommodations, modifications, and effective supports for children with identified disabilities or developmental delays embedded throughout that facilitate their active engagement and learning? • To what extent does the curriculum provide scaffolded supports that increase opportunities for integrating children with disabilities in general education early childhood settings while effectively meeting their unique developmental needs and fostering healthy peer relationships? • To what extent does the curriculum provide strategies and approaches for teaching developmental skills across all areas of

Elements of Curriculum Quality and Report Sources	Description of Elements of Curriculum Quality	Questions to Ask When Considering Elements of Curriculum Quality
	educational experience (Grisham & Hemmeter, 2017). • Children with disabilities require teaching of developmental skills across all areas of development (Barton & Smith, 2015; DEC, 2014). A growing body of evidence suggests that interventions incorporating multiple domains (social, language, cognitive) are more effective in promoting positive social outcomes and contributing to children's future academic success (Caprara et al., 2000; Guralnick, 1992; Stanton-Chapman & Snell, 2011). • Children with disabilities often require explicit instruction in social skills. • High-quality curricula enhance both social and communicative skills in children with disabilities. For example: ○ Research suggests that children who can effectively demonstrate skills such as initiating conversation with peers, taking turns during social interactions, and adapting responses based on their peers' communication are preferred communication partners for their peers. ○ Research indicates that both pragmatic language and self-regulation is a positive predictor of cross-status play (i.e., interactions between children with disabilities and their typically developing peers), and that pragmatic language appeared to be more crucial for children with disabilities in fostering these cross-status interactions	development, including skills in pragmatic language, social and communicative skills, and self-regulation?

Elements of Curriculum Quality and Report Sources	Description of Elements of Curriculum Quality	Questions to Ask When Considering Elements of Curriculum Quality
	than it was for children without disabilities. • High-quality curricula include targeted and scaffolded approaches to instruction for children with disabilities that have been found to enhance their developmental trajectories (Division for Early Childhood [DEC], 2014). For example: ○ Children with autism will likely require specialized intervention focused on language and social skills development (Fuller & Kaiser, 2020; Landa, 2018; Pasco; 2018). Likewise, children with Down syndrome will require focused support for gross and fine motor development, as well as attention to cognitive development (Bull, 2020; Marchal et al., 2016). • Curricula designed for children with disabilities that provide supports for implementing equitable, anti-bias, and antiracist teaching practices have the potential to help ameliorate the negative impacts of biases on children's opportunities and academic outcomes.	

Elements of Curriculum Quality and Report Sources	Description of Elements of Curriculum Quality	Questions to Ask When Considering Elements of Curriculum Quality

13
 	
Supports individualized instruction for every child
 	
Report sources: p. Xviii, 4, 26, 118, 125, 126, 128, 129
	High-quality curricula include guidance for adapting experiences depending on children's prior learning, abilities, strengths, and needs to enable them to achieve desired learning and developmental goals. Differentiation should be based on understanding children's ability levels, cultural and linguistic backgrounds, interests, and dispositions. A high-quality curriculum provides strong guidance and support for teaching effectively and sensitively while being flexible and adaptable.
	
	• A "productive adaptation" positively reinterprets a curriculum, preserving its essence while tailoring the learning experience to the strengths, needs, and characteristics of particular classrooms and children (Brown & Campione, 1996).Two types of adaptations need to be included in a curriculum, with specific, easy-to-implement suggestions.
	  ○ "Micro-adaptations" occur during a lesson to maximize engagement and learning.
	  ○ "Macro-adaptations" involve reflecting on teaching and learning episodes so as to adjust future instruction.
	
	• High-quality curricula recognize that appropriate, engaging content and effective learning experiences may not be the same for every child.
	
	• A program may adopt a validated curriculum, whether domain-specific or comprehensive; but if it is to be effective, teachers need to implement it with fidelity and to individualize and adapt their instruction in culturally and
		• To what extent does the curriculum offer guidance for teachers to adapt recommended teaching strategies and learning experiences, to enable each individual child to achieve desired learning and developmental goals, according to individual children's:
		  ○ strengths/assets,
		  ○ interests,
		  ○ abilities,
		  ○ needs, prior learning, and knowledge,
		  ○ cultural and linguistic backgrounds, and
		  ○ dispositions/personalities?
		
		• To what extent is the guidance for individualization detailed and easy to use, including both the effective use of formative assessment to understand children's thinking, strategies, strengths, weaknesses, and interests, and ways to modify content and teaching strategies based on this understanding?
		
		• To what extent does the curriculum include both "micro-adaptations" (those which occur during a lesson to maximize engagement and learning) and

Elements of Curriculum Quality and Report Sources	Description of Elements of Curriculum Quality	Questions to Ask When Considering Elements of Curriculum Quality
	linguistically responsive ways based on regular assessment of children's progress. • High-quality curricula support teachers' agency to imbue curriculum implementation with sovereignty, self-determination, and cultural relevance (see Castagno & Brayboy, 2008). • Curriculum must be developed for the rich diversity of the population of preschool children and adaptable for the unique strengths and needs of each individual child.	"macro-adaptations" (those which involve reflecting on teaching and learning episodes so as to adjust future instruction) with specific, easy-to-implement suggestions?
14 **Supports family engagement** *Report sources: 9, 124, 125, 128, 352*	High-quality curricula promote reciprocal partnerships and engagement with families (Beleslin et al., 2022; Samuelsson et al., 2006). Curricula should include guidance for educators focused on effective approaches and strategies to foster inclusive and culturally responsive home–school partnerships in support of children's learning. • High-quality curricula support early childhood educators in collaborating with families to co-construct curricular components that are meaningful and relevant for all children in the classroom; authentically elevate the role of families in supporting their children's development; recognize the diversity in and value of family practices and integrate these practices when possible; honor their languages, cultures, beliefs, traditions, and talents; and invite these assets into the classroom. • Curricula should support teachers' to engage with and learn	• To what extent does the curriculum include guidance for educators focused on effective approaches and strategies to foster inclusive, reciprocal, and culturally responsive home-school partnerships in support of children's learning? • To what extent does the curriculum support teacher collaboration with families to co-construct curricular components that are meaningful and relevant for all children in the classroom? • To what extent does the curriculum support teachers to recognize the diversity in and value of family practices and integrate these practices when possible into

Elements of Curriculum Quality and Report Sources	Description of Elements of Curriculum Quality	Questions to Ask When Considering Elements of Curriculum Quality
	from families and communities (González et al., 2005; Reyes et al., 2016). Educators need to incorporate and build on families' funds of knowledge—the experiences, traditions, resources, and rich cultures they bring with them. Curricula need to build in communication supports to promote ongoing, two-way partnerships to bring the home into the school and vice versa (Sanders et al., 2007). • As educators use formative assessment to differentiate the curriculum, family members play an important role in integrated assessment and data-driven instruction. By involving parents and other family members in integrated assessment, teachers can engage parents as mutual partners on a meaningful level, which has various benefits in supporting children's learning (Keeley, 2014). • Connecting with families about child progress and development also creates opportunities to identify and reduce measurement biases that may occur because of a student's cultural or linguistic background. Family members may have insights into children's strengths and areas of development and provide historical, contextual, and cultural information that can shed light on children's instructional progress.	classroom experiences? • To what extent does the curriculum honor family languages, cultures, beliefs, traditions, and talents and invite these assets into the classroom? • To what extent are materials and strategies provided for families in their preferred languages so they can engage in school experiences and decisions and extend children's learning at home? • To what extent are family members involved in integrated assessment? To what extent are teachers supported to connect with families about child progress and development, and to share and discuss assessment information?

Elements of Curriculum Quality and Report Sources	Description of Elements of Curriculum Quality	Questions to Ask When Considering Elements of Curriculum Quality

15
 	
Includes ongoing assessment tools and strategies aligned with goals and experiences
 	
Report sources: 4 8, 126 , 128, 153, 154, 160, 348
	Assessment measures should be both formative and summative, should consider the role of bias (e.g., race, language, culture, disability status) in assessment, and should capture the full range of meaningful child outcomes and experiences (i.e., including positive social-emotional development, positive racial identity for children of color, and bilingualism/biliteracy for multilingual learners).
	
	• Ideally, formative assessment is built into a curriculum.
	
	• Formative assessment is one of the most strongly empirically supported teaching approaches (Jiang et al., 2023; National Mathematics Advisory Panel, 2008; Shepard, 2005). Formative assessment entails using an ongoing understanding of children's thinking and learning to inform and adapt instruction for groups and individuals.
	
	• The National Research Council (2001, 2006, 2008) contends that a successful system of assessments must be coherent along three dimensions:
	  ○ **Horizontally coherent**—assessment systems, curriculum, instruction, and early learning standards target the same goals for learning and work together to support children's developing knowledge and skill across all domains.
	  ○ **Vertically coherent**—all levels of the system (classroom, center, school or program, and state) share an understanding of the purposes and uses of assessment tools.
		• To what extent is there support for teachers to collect, analyze, and use information from both formative and summative assessments to adapt and individualize instruction and to help children make continued progress?
		
		• To what extent do assessment measures consider the role of bias in assessment?
		
		• To what extent do assessment measures capture the full range of meaningful child outcomes and experiences?
		
		• To what extent are formative assessments built into/embedded in curriculum?

Elements of Curriculum Quality and Report Sources	Description of Elements of Curriculum Quality	Questions to Ask When Considering Elements of Curriculum Quality
	○ **Developmentally coherent**—the assessment system draws on what is known about how children's content knowledge, abilities, and understanding develop over time and what they need to progress at each stage of the process, which would also inform instruction.	
16 **Provides professional development** *Report sources: 9, 128, 142, 154, 159, 160, 172, 228, 239, 260, 271*	Professional development, training and resources should support teachers' understanding of how curricular content, instructional techniques, assessments, and pedagogy align to support teachers' implementation of curricula. Educators should receive professional development, regular in-classroom coaching, and access to materials tied to the implementation of evidence-based curricula. • Professional development should include 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. • Those providing professional development need to remind teachers that soft scripts are intended as two-way communication with professionals. This perspective is grounded in the assumption that the teacher–curriculum relationship is interactive and dynamic (Drake et al., 2014). • Research suggests that effective professional learning for instructional practices has several key features:	• To what extent are there initial and ongoing professional learning opportunities to ensure that teachers implement the curriculum with fidelity (a balance of compliance fidelity with fidelity of vision)? • To what extent does professional development: ○ develop teacher knowledge of the specific content to be taught, including deep conceptual knowledge of subjects and their processes ○ give attention to specific pedagogical content knowledge, including three aspects of learning trajectories (goal, developmental progression of levels of thinking, and instructional activities corresponding to each level ○ include active learning)? • To what extent does professional development reflect other features

Elements of Curriculum Quality and Report Sources	Description of Elements of Curriculum Quality	Questions to Ask When Considering Elements of Curriculum Quality
	○ Develops knowledge of the specific content to be taught, including deep conceptual knowledge of the subject and its processes (Blömeke et al., 2011; Brendefur et al., 2013; Garet et al., 2001). ○ Gives corresponding attention to specific pedagogical content knowledge, including all three aspects of learning trajectories: the goal, the developmental progression of levels of thinking, and the instructional activities corresponding to each level—and especially their connections. This feature of professional learning also helps build a common language for educators in working with each other and other groups (Brendefur et al., 2013; Bryk et al., 2010). ○ Includes active learning involving the details of setting up, conducting, and formatively evaluating subject-specific experiences and activities for children, including a focus on reviewing student work and small-group instructional activities (Brendefur et al., 2013; Garet et al., 2001). ○ Focuses on common actions and problems of practice, which, to the extent possible, should be situated in the classroom. ○ Grounds experiences in particular curriculum materials and allows educators to learn and reflect on that curriculum, implement it, and discuss their implementation. ○ Includes in-classroom coaching. The knowledge and skill of coaches are of critical importance. Coaches also must	suggested by research on effective professional learning for instructional practices? (See list to the left.) • To what extent does professional development include trauma-informed practices for teachers?

Elements of Curriculum Quality and Report Sources	Description of Elements of Curriculum Quality	Questions to Ask When Considering Elements of Curriculum Quality
	have knowledge of the content, general pedagogical knowledge, and pedagogical content knowledge, as well as knowledge of and competencies in effective coaching. ○ Employs peer study groups or networks for collective participation by educators who work together (Garet et al., 2001). ○ Incorporates sustained and intensive professional learning experiences and networks rather than stand-alone professional learning activities (Garet et al., 2001). ○ Ensures that all professional learning activities (e.g., trainings, adoption of new curricula, implementation of new standards) are interconnected and consistent in content and approach (Brendefur et al., 2013; Garet et al., 2001). This consistency also involves a shared language and goal structure that promote peer communication and collaboration. ○ Ties professional learning to the science of adult learning. There is now increasing recognition of the importance of multiple, comprehensive domains of knowledge and learning for adults (NRC, 2012). ○ Addresses equity and diversity concerns in access to and participation in professional learning. ○ Addresses economic, institutional, and regulatory barriers to implementing professional learning. • Professional learning should support educators as they	

Elements of Curriculum Quality and Report Sources	Description of Elements of Curriculum Quality	Questions to Ask When Considering Elements of Curriculum Quality
	scaffold inclusive peer interactions; eliminate biases that undermine the development of close, affirm educator–child relationships; and rely on warm, consistent, and proactive classroom management strategies that are essential to the effective delivery of an equitable curriculum. These strategies need to be incorporated into the core elements of both curriculum design and professional development. • Professional learning should provide educators with the training and supports they need to develop warm and affirming relationships with all children; ensure inclusive, prosocial peer interactions; and provide consistent, supportive, and proactive management of the overall classroom social environment is an integral component of curriculum reform. • Professional learning should support general education teachers to teach young children with disabilities effectively (D'Agostino & Douglas, 2021; Stites et al., 2021). While positive attitudes toward inclusion are prevalent among many teachers, a study of Head Start and public pre-K teachers found that many of the educators did not have a strong sense of self-efficacy in implementing inclusive practices such as individualized instruction and alternative communication methods. They also identified priority areas for professional development, particularly in managing behavioral issues, positioning children with motor impairments, and teaching communication strategies (Bruns & Mogharreban, 2007; Meek et al., 2020b).	

Elements of Curriculum Quality and Report Sources	Description of Elements of Curriculum Quality	Questions to Ask When Considering Elements of Curriculum Quality
	• Knowledge of trauma-informed approaches is a critical component of the professional preparation of early educators (de la Osa et al., 2024). • Coaching, training, and/or mentoring that accompany a well-structured, sequenced curriculum are key factors for ensuring curriculum quality and effectiveness. • Frequent and/or intensive training and coaching is integral to building teacher skills—for example, receiving coaching at least twice a month from an experienced teacher who is steeped in early childhood education content knowledge and possesses sophisticated pedagogical practices grounded in teaching/learning and child development (Weiland et al., 2018); receiving ongoing teacher training and in-classroom coaching (Portilla et al., 2020); or having long-term, multiyear professional development opportunities (Sarama et al., 2021). Overall, having access to training and resources that support teachers' understanding of how curricular content, instructional techniques, assessments, and pedagogy align benefits teachers' implementation of curricula and subsequently promotes student outcomes (Cohen-Vogel et al., 2020; Portilla et al., 2020). • Coaching teachers virtually has been successful and is more scalable than other approaches (Kinzie et al., 2014; Whittaker et al., 2015).	

Elements of Curriculum Quality and Report Sources	Description of Elements of Curriculum Quality	Questions to Ask When Considering Elements of Curriculum Quality
17 **Multiple modes of learning** *Report sources: 5, 96, 117*	Children learn in a multiplicity of ways, including child-initiated and teacher-guided play, exploration, observation, social engagement, intentional teaching in small and large groups, individual hands-on experiences, and other pedagogy that is responsive to their strengths and interests. • Children learn in multiple ways—through active exploration; through observation of others, notably older children and adults; and through adults' explicitly sharing knowledge with them. • Most of the time, a combination of approaches featuring active thinking and learning on the part of the child and intentional, direct instruction where required is recommended (de Jong et al., 2023).	• To what extent does the curriculum include opportunities for children to learn in a multiplicity of ways, including: ○ child-initiated play, ○ teacher-guided play, ○ exploration, ○ observation, ○ social engagement, ○ intentional teaching in small and large groups, ○ individual hands-on experiences, and ○ other pedagogy that is responsive to their strengths and interests? • To what extent does the curriculum include activities in which children learn in multiple ways—through: ○ active exploration; ○ through observation of others, notably older children and adults; and ○ through adults' explicitly sharing knowledge with them? • To what extent do curriculum activities offer a combination of learning approaches featuring active thinking and learning on the part of the child and intentional, direct

Elements of Curriculum Quality and Report Sources	Description of Elements of Curriculum Quality	Questions to Ask When Considering Elements of Curriculum Quality
		instruction where required?
18 **Supports positive interactions** *Report sources:* 124, 215, 223, 239	High-quality curricula ensure multiple opportunities for children to talk with, not just listen to, teachers and interact with peers by applying research on productive dialogues and "think-pair-share" strategies, incorporating the best of such interactions between teachers and children, as well as interactions among children (e.g., Fraivillig et al., 1999; Palincsar, 1986). • High-quality curricula can also help teachers achieve other critical characteristics of early education, such as stimulating and supportive interactions between teachers and children (Yoshikawa et al., 2013) and, particularly, among teachers and children and content (Clements & Wright, 2022). • Curricula should provide a guide for educator–child interactions aimed at imparting skills and knowledge, as well as excitement about learning and views of oneself as a strong learner. These interactions occur within a broader context that can either facilitate or undermine these immediate instructional goals and thus the promise of early education…The extent to which this context is sensitive to and celebrates young children's backgrounds and individual differences and ensures equitable access to high-quality learning opportunities is central to effective curriculum delivery and associated learning outcomes. • By engaging in proactive social scaffolding in which children	• To what extent does the curriculum ensure multiple opportunities for children to talk with, not just listen to, teachers and interact with peers by applying research on productive dialogues and "think-pair-share" strategies? • To what extent does the curriculum help teachers create stimulating and supportive interactions between teachers and children? • To what extent does the curriculum guide educator-child interactions aimed at imparting skills and knowledge as well as excitement about learning and views of oneself as a strong learner (in a context that is sensitive to and celebrates young children's backgrounds and individual differences and ensures equitable access to high-quality learning opportunities)? • To what extent does the curriculum support teachers to engage in proactive social scaffolding in which children are helped to enter a peer group, resolve conflicts constructively, and learn to take turns and

Elements of Curriculum Quality and Report Sources	Description of Elements of Curriculum Quality	Questions to Ask When Considering Elements of Curriculum Quality
	are helped to enter a peer group, resolve conflicts constructively, and learn to take turns and share, educators facilitate more harmonious and complex peer interactions (Acar et al., 2017; Williams et al., 2010). • Classrooms with an explicit focus on fostering egalitarian interactions among the children (collaborative learning), respecting and supporting the unique developmental and cultural differences of each child, and encouraging all children to contribute actively to the learning process can counteract the emergence of peer hierarchies (Boyce et al., 2012). • Scaffolding inclusive peer interactions; eliminating biases that undermine the development of close, affirming educator–child relationships; and relying on warm, consistent, and proactive classroom management strategies are essential to the effective delivery of an equitable curriculum. These strategies need to be incorporated into the core elements of both curriculum design and professional development.	share (supporting harmonious and complex peer interactions)? • To what extent does the curriculum support teacher to create classrooms with an explicit focus on fostering egalitarian interactions among the children (collaborative learning), respecting and supporting the unique developmental and cultural differences of each child, and encouraging all children to contribute actively to the learning process (counteracting the emergence of peer hierarchies)? • To what extent does the curriculum incorporate scaffolding inclusive peer interactions? • To what extent does the curriculum guide eliminating biases that undermine the development of close, affirming educator-child relationships? • To what extent does the curriculum rely on warm, consistent, and proactive classroom management strategies?

Elements of Curriculum Quality and Report Sources	Description of Elements of Curriculum Quality	Questions to Ask When Considering Elements of Curriculum Quality
19 **Strengths-based / Assets-based Approach** *Report sources:* xix, 5, 94, 96, 113	A strengths-based approach leverages children's assets and builds upon their prior knowledge, which is a product of their cultural and linguistic experiences at home and in their communities. Curricula should support understanding and valuing children's cultures and the experiences they afford for learning. High-quality curricula reject long-held deficit perspectives of young children, particularly Black, Latine, and Indigenous children, multilingual learners, children with disabilities, and children living in poverty. • Variations in the lived experiences of children influence what children know and how they learn, as all children learn through their environments and experiences, which are embedded within cultural contexts. Accordingly, celebrating, discussing, and incorporating this diversity of experiences and cultures within early education settings is critical to promoting positive early development and learning and setting young children on a positive trajectory for lifelong learning.	• To what extent does the curriculum enable children to realize their potential by leveraging their assets and building on their prior knowledge, which is a product of their cultural and linguistic experiences at home and in their communities? • To what extent does the curriculum support understanding and valuing cultures and the experiences they afford for learning, and the ways in which those contexts shape the way children learn? • To what extent are a diversity of experiences and cultures celebrated, discussed, and incorporated into the curriculum? • To what extent does the curriculum reject long-held deficit perspectives of young children, particularly Black, Latine, and Indigenous children, multilingual learners, children with disabilities, and children living in poverty?

Elements of Curriculum Quality and Report Sources	Description of Elements of Curriculum Quality	Questions to Ask When Considering Elements of Curriculum Quality
20 **Playful learning and guided play** *Report sources:* 72, 73, 75, 77, 96, 115, 116, 124	High-quality curricula promote joyful, engaged learning for all children (Bohart & Procopio, 2022). Children learn from play, exploration, and pedagogy that are responsive to their interests. • Instruction that includes more play-based activities designed to foster exploration, curiosity, complex language skills, and higher-order thinking (e.g., acting out child-created narratives; exploring the conditions that lead plants to grow at different rates) are associated with positive long-term effects on children's learning, as well as on their learning dispositions (e.g., Frausel et al., 2020, 2021). • Young children need to gain both basic skills and higher-order thinking skills and be afforded the opportunities to acquire these skills in early education settings. Focusing on basic skills through direct instruction to the exclusion of agentic play-based activities may have unintended negative consequences because such gains have been found to fade over time (Bailey et al., 2016, 2017, 2020). • Children's play provides teachers with insights into how to construct engaging guided play experiences, enabling the teacher to build on children's interests and skills, which may be one of the most effective ways to support learning. • Preschool environments vary in terms of whether exploration and question asking are encouraged or discouraged in favor of more structured activities that	• To what extent does the curriculum promote joyful, engaged learning? • To what extent does the curriculum include a range of intentional play experiences, including adult-directed playful activities (in which the adult has a learning goal in mind), guided play (in which the adult gives the child agency but provides scaffolding and guidance with a learning goal in mind), and free play (in which the child both initiates and constructs play without a specific learning goal), with an overall emphasis on guided play? • To what extent does the curriculum include guided play that supports the growth of content knowledge and the learning process, enabling children to pursue their questions, problem solve, and collaborate? • To what extent does the curriculum encourage exploration and question asking? • To what extent does the curriculum support teachers to observe and reflect on child-initiated play to learn about children's cultural experiences and how they see themselves within the larger society, and to

Elements of Curriculum Quality and Report Sources	Description of Elements of Curriculum Quality	Questions to Ask When Considering Elements of Curriculum Quality
	emphasize correct answers and adults providing children with information (Reid & Kagan, 2022). • Differential access to autonomy-granting, play-based pedagogy in early education is potentially harmful and is typically rooted in stereotypes about weaknesses of children and their families instead of being attributed to systemic factors that contribute to group differences (Adair, 2015; Adair & Colegrove, 2021; Adair et al., 2017; National Academies, 2023). • Guided play provides the child with agency to test their nascent theories about the world. It also provides them with adult-guided situations and language that support their learning (Hirsh-Pasek et al., 2020). • Research findings indicate that guided play supports not only the growth of content knowledge (the "what" of learning) but also the learning process (the "how" of learning), which together enable them to pursue their questions, problem solve, and collaborate. With the exponential growth of information in contemporary society, it is important that children's experiences help them gain content knowledge, confidence, curiosity, creativity, communication, and collaborative skills—known as the 6 Cs; each is valued in the 21st century (Hirsh-Pasek et al., 2020). • There are many different kinds of play, and failure to recognize the nuanced spectrum of types of play can lead to confusion about how play relates to and supports learning.	inform guided play, building on children's interests and skills? • To what extent does the curriculum support equitable opportunities for children to experience autonomy-granting, play-based pedagogy? • To what extent does the curriculum include play-based activities designed to foster exploration, curiosity, complex language skills, and higher-order thinking (e.g., acting out child-created narratives; exploring the conditions that lead plants to grow at different rates)? • To what extent does the curriculum support teachers to implement play, exploration, and pedagogy that are responsive to children's interests? • To what extent is playful learning implemented through whole- and small-group activities, specific learning centers, and outdoor play? • To what extent is content learning implemented through intentional opportunities for play and playful learning activities?

Elements of Curriculum Quality and Report Sources	Description of Elements of Curriculum Quality	Questions to Ask When Considering Elements of Curriculum Quality
	Play ranges from adult-directed play activities, in which the adult has a learning goal in mind; to guided play, in which the adult gives the child agency but provides scaffolding and guidance with a learning goal in mind; to free play, in which the child both initiates and constructs play without a specific learning goal (Zosh et al., 2018). Zosh et al. (2018) point out that play can be characterized by three attributes: the level of adult involvement, the extent to which the child creates the play, and whether a learning goal is present. • The lack of professional development around play is a factor in this confusion, and the emphasis on free play is at odds with research findings showing that guided play is more conducive to supporting many learning goals. • Research highlights the importance of considering play in a culturally responsive manner, not as something in which all children engage in a uniform manner. Viewed in this way, children's play has the potential to contribute to the cultural relevance of early education, as child-initiated play reflects children's cultural experiences and how they see themselves within the larger society, providing teachers with an important lens into children's lived experiences (Adair & Doucet, 2014). • Play may be powerful developmentally if the environment, interactions, and specific activities are introduced or guided by teachers. Supplementing this approach with awareness of systemic bias may be more effective. Such playful learning can include whole- and small-group activities, specific	

Elements of Curriculum Quality and Report Sources	Description of Elements of Curriculum Quality	Questions to Ask When Considering Elements of Curriculum Quality
	learning centers, and outdoor play. Introducing such intentionality through curricula has been shown statistically and practically to have significant positive effects on preschoolers learning in the United States and internationally (e.g., Clements et al., 2020; Dockett & Perry, 2010; Fisher et al., 2013; Helenius, 2018; Lewis Presser et al., 2015; Sarama & Clements, 2009a; Schmitt et al., 2018; Størksen et al., 2023; Taner Derman et al., 2020).	
21 **Prioritizes child engagement and agency** *Report sources:* 4, 78, 96, 115, 123, 161; 163	High-quality curricula include rich and meaningful content that centers child engagement and agency. • Children need to learn how to gain new knowledge, how to find answers to their questions, how to problem solve, how to communicate their ideas, and how to collaborate. These active, agentic, and playful approaches to learning, when implemented well, can serve to nurture children's excitement about learning. • Young children play an important role in their interactions and development and are active participants in sharing knowledge. Autonomy-granting, play-based pedagogy in early education builds advanced language and thinking skills as well as skills that involve pursuing learning in which young children are interested and collaborating and conversing with other children. Limiting children's agency in early education contexts is typically rooted in stereotypes about weaknesses of children and their families, rather than being attributed to systemic factors that contribute to group differences, such as differences in vocabulary size.	• To what extent does the curriculum help children learn how to gain new knowledge, how to find answers to their questions, how to problem solve, how to communicate their ideas, and how to collaborate? • To what extent does the curriculum promote children being active participants in sharing knowledge? • To what extent does the curriculum support children to pursue learning that the children are interested in and to collaborate and converse with other children? • To what extent is academic content made meaningful and engaging for young children? • To what extent does the curriculum support

Elements of Curriculum Quality and Report Sources	Description of Elements of Curriculum Quality	Questions to Ask When Considering Elements of Curriculum Quality
	• Opportunities to experience agency are important to children's ability to learn and show their capabilities (Adair, 2014), which is a key characteristic of an active learner. "Active learners" are children who initiate explorations of and interactions with the surrounding world and with both adults and peers (Brosterman, 1997; Cobb, 2000; DeVries et al., 2002; Fröbel, 1885; Gelman, 1994; NRC, 2001b; Piaget, 1973; Samuelsson et al., 2006). Thus it is important that developers of high-quality curricula avoid a preponderance of passive "reception" of knowledge, recognizing that children construct knowledge and understanding from a wide variety of experiences (Clements, 1997).	children to initiate explorations of and interactions with the surrounding world with both adults and peers?
22 **Balances constrained and unconstrained skills** *Report sources:* 116	High-quality curricula develop both constrained and non-constrained skills. • Important constrained goals in preschool include attaining alphabet knowledge and phonological awareness; an example of a non-constrained goal is learning vocabulary. • Teaching only non-constrained, higher-level skills may be counterproductive given that lower-level knowledge may be necessary for the effective learning and use of higher-level processes, perhaps especially in hierarchical content domains such as mathematics (e.g., Clements & Sarama, 2021; Hartman et al., 2023; Piasta, 2023; Xu et al., 2023) and early literacy (Roberts et al., 2019).	• To what extent does the curriculum teach both constrained and unconstrained skills? • To what extent does the curriculum support both differentiation and meaningful synthesis of goals and both constrained and non-constrained skills when appropriate, with a focus on specific goals for individual children when appropriate?

Elements of Curriculum Quality and Report Sources	Description of Elements of Curriculum Quality	Questions to Ask When Considering Elements of Curriculum Quality
	• Researchers of color have argued that privileging higher- over lower-level skills and knowledge may not serve the needs of some communities because they have not had equitable opportunities to learn those skills and attain that knowledge (Delpit, 1988, 2013). Therefore, high-quality preschool curricula should support both differentiation and meaningful synthesis of goals and skills when appropriate (Clements et al., 2011; Mulligan et al., 2020), with a focus on specific goals for individual children when appropriate.	
23 **Anti-bias, and anti-racist, and equitable** *Report sources:* 5, 39, 118, 121, 218, 231, 232	High-quality curricula include efforts to identify and reject long-held biases, deficit framings, and/or stereotyped assumptions about children from racially, culturally, and linguistically minoritized communities, as well as children with disabilities and children experiencing poverty. • In concert with anti-bias education, anti-racist education seeks to interrogate White privilege, power, and epistemology in learning by "acknowledging and addressing the primacy of race in education and social relations" (Escayg, 2020, p. 5). Escayg (2020) underscores three core principles of antiracist education: (1) acknowledging the dominant discourse and power in centering one perspective in early childhood systems, which influences teaching curricula and guidelines; (2) using a strengths-based perspective embedded with historical and cultural knowledge about practices related to families and parenting; and (3) "unsettling and unmasking the white racial frame" by acknowledging the role of Eurocentric	• To what extent does the curriculum include efforts to identify and reject long-held biases, deficit framings, and/or stereotyped assumptions about children from racially, culturally, and linguistically minoritized communities, as well as children with disabilities and children experiencing poverty? • To what extent does the curriculum support anti-bias instruction (going beyond celebrating diversity to support children's development of a confident sense of identity without needing to feel superior to others; support an ease with human diversity; support a sense of fairness and justice; support the skills of empowerment and the ability to stand up for themselves

Elements of Curriculum Quality and Report Sources	Description of Elements of Curriculum Quality	Questions to Ask When Considering Elements of Curriculum Quality
	perspectives on knowledge and interactions "that operate on intellectual, emotional, and social levels, including within institutional contexts such as the media and schools" (Escyag, 2020, p. 10). Curricula can support such goals, but achieving anti-bias instruction requires the inclusion of nondominant perspectives, voices, and knowledge in the conceptualization of teaching, learning, guidelines, and what constitutes best practices (Allen et al., 2021; Escayg, 2020; Iruka et al., 2023).	or for others)? • To what extent does the curriculum support teachers to use an equity lens, such as ensuring that they are aware of their own implicit bias based on children's sociodemographic background and providing varied opportunities for children, especially those from marginalized groups, to express their ideas? • To what extent does the curriculum incorporate reading or writing of stories that promote (1) positive identity for children of all races, ethnicities, languages, and abilities; (2) respect for differences; and (3) examples of fairness, agency, and actions that promote social justice? • To what extent does the curriculum include nondominant perspectives, voices, and knowledge in the conceptualization of teaching, learning, guidelines, and what constitutes best practices?

Elements of Curriculum Quality and Report Sources	Description of Elements of Curriculum Quality	Questions to Ask When Considering Elements of Curriculum Quality
24 **Includes teacher educative content** *Report sources:* 121	High-quality curriculum should incorporate resources and structures that help teachers gain knowledge and understanding of effective teaching strategies and practices, including bolstering content knowledge and understanding of how children's thinking and learning can be best supported. • High-quality curricula are developed to be supportive; adaptable; and, especially, educative for teachers. High-quality curricula provide research-based guidance that benefits everyone. • Educative curricula have the following features: ○ First, because teachers will adapt curricula, motivated by concerns about time and students' competencies, educative materials suggest adaptations of lessons that would take different amounts of time and meet a range of students' needs while meeting goals (e.g., narratives describing alternatives that reduce time needed but providing opportunities for learning). ○ Second, because different teachers will need and use different educative features, especially regarding discourse and explanations (Broderick et al., 2022), curriculum designers develop a variety of such features (e.g., narratives; boxes on content and pedagogical knowledge, including generative questions and rubrics) and help teachers recognize any new practices. Languages and vocabulary that teachers can comprehend comfortably are essential. ○ Third, because teacher learning is situated in everyday	• To what extent does the curriculum incorporate resources and structures that help teachers gain knowledge about effective teaching strategies and practices, including bolstering content knowledge and understanding how children's thinking and learning can be best supported? • To what extent does the curriculum provide research-based educative guidance for teachers? • To what extent does the curriculum suggest adaptations of lessons that would take different amounts of time and meet a range of students' needs while meeting goals? • To what extent does the curriculum have a variety of educative features (especially regarding discourse and explanations) (e.g. narratives; boxes on content and pedagogical knowledge, including generative questions and rubrics) and help teachers recognize any new practices? • To what extent does teacher educative content use languages and vocabulary that teachers can comprehend comfortably? • To what extent do educative materials

Elements of Curriculum Quality and Report Sources	Description of Elements of Curriculum Quality	Questions to Ask When Considering Elements of Curriculum Quality
	work, educative materials provide representations of practice, such as rubrics illustrating key concepts with student work examples or learning stories. ○ Fourth, because content can be new, educative curricula provide multiple supports for teachers' understanding of the content, especially the big ideas of the domain (e.g., Clements & Conference Working Group, 2004; National Academies, 2022), through content storylines, visuals, and children's own definitions of concepts. • "Educative curriculum" is designed to support the learning and development of teachers as well as children, particularly in the content domains. Educative curricula are especially valuable because children from minoritized communities too often have less qualified teachers who may not have been prepared to teach the content domains, a situation that perpetuates inequitable opportunities to learn. • High-quality curricula support teachers in better understanding children by observing, interacting, and being reflective (Burchinal et al., 2022; Samuelsson et al., 2006). Curricula will be inadequate if they simply provide activities without guidance for teachers to support the thinking and learning for which those activities are designed. • High-quality curricula include resources and structures that help teachers gain profound knowledge of the content to be taught (Cabell et al., 2023; Ma, 1999), as well as knowledge of children's thinking and learning and how to support their	provide representations of practice, such as rubrics illustrating key concepts with student work examples or learning stories? • To what extent does the curriculum provide multiple supports for teachers' understanding of the content, especially the big ideas of the domain, through content storylines, visuals, and children's own definition of concepts? • To what extent does the curriculum support the learning and development of teachers as well as children, particularly in the content domains? • To what extent does the curriculum support teachers in better understanding children by observing, interacting, and being reflective? • To what extent does the curriculum provide guidance alongside activities for teachers to support the thinking and learning for which those activities are designed? • To what extent does the curriculum support teachers to develop deep knowledge of the fundamentals of the content domains?

Elements of Curriculum Quality and Report Sources	Description of Elements of Curriculum Quality	Questions to Ask When Considering Elements of Curriculum Quality
	learning (Clements & Sarama, 2021). This curriculum feature may be particularly important in the STEM domains. • Curricular supports for teachers that enable them to develop deep knowledge of the fundamentals of the content domains are essential for understanding what one is teaching. • This does not imply use of a narrowly "scripted" curriculum; rather, focusing on the shared scientific base is a more effective and efficient way to improve education. Further, such scientifically grounded, shared practice is, somewhat paradoxically, more likely to generate creative contributions. • Productive adaptations and flexible curriculum planning are necessary for teachers and children in different sociocultural contexts and with different individual strengths, assets, interests, and needs (Bredekamp & Joseph, 2024). From this perspective, fidelity is being true to the research guidance and the vision of the curriculum as supporting all children's development, not compliance with a rigid script. • It is crucial for high-quality curricula to effectively promote teachers' autonomy in choosing and implementing a curriculum (making productive adaptations [Brown & Campione, 1996]). High-quality curricula also need to promote teachers' access to resources and support for teachers from program administrators (Lieber et al., 2010; Sarama & Clements, 2021; Sarama et al., 2016b).	• To what extent does the curriculum support teachers to focus on scientifically-based, shared practice to implement flexible curriculum planning that responds to the different sociocultural contexts, strengths, assets, interests, and needs of children? • To what extent does the curriculum support teachers' autonomy in choosing and implementing a curriculum, and making productive adaptations? • To what extent does the curriculum promote teachers' access to resources and support from program administrators? • To what extent does the curriculum include detailed prompts or suggestions for lessons while also incorporating teacher voice? • To what extent does the curriculum provide lesson-specific supports for adaptations as well as general expository supports?

Elements of Curriculum Quality and Report Sources	Description of Elements of Curriculum Quality	Questions to Ask When Considering Elements of Curriculum Quality
	• A review across five large-scale evaluations identified six potentially important features of both comprehensive and domain-specific curricula, including the inclusion of detailed prompts or suggestions for the lesson while also incorporating teacher voice. An example of detailed prompts is explicit illustrations of goals to be achieved when reading aloud a book; such goals range from basic comprehension and recall to high-level inference making and depend on which book is being read. Such prompts are not intended to be repeated as given, but are reminders of key pedagogical strategies, vocabulary, and so forth that teachers can read in advance or have in front of them as they teach. • "Soft-scripted" prompts preserve teacher voice by providing guidance but not requiring compliance. They are intended as two-way communication with professionals. This perspective is grounded in the assumption that the teacher–curriculum relationship is interactive and dynamic (Drake et al., 2014). • The structure and content of supports for teachers may lead to different types of learning (Beyer & Davis, 2015). Beyer and Davis found that lesson-specific narrative supports helped preservice teachers understand and use specific adaptations. Teachers considered those supports to be useful, relevant, and motivating. In contrast, general expository supports helped teachers identify and use principles of practice in analyzing lesson plans (Beyer & Davis, 2015). Both types of supports may therefore be	

Elements of Curriculum Quality and Report Sources	Description of Elements of Curriculum Quality	Questions to Ask When Considering Elements of Curriculum Quality
	valuable; however, it is noteworthy that the lesson-specific supports for adaptations are critical for effective formative assessment and inclusive education. Materials need to help teachers attend to children's level of thinking in creating small groups (Jiang et al., 2023).	
25 **Usable, accessible, and supports implementation with fidelity** *Report sources: 56, 57, 118, 119, 125 (fidelity tool), 160*	To move the needle on classroom processes and child learning, a preschool curriculum must be implementable at a high level of quality by teachers with a wide range of preparation and skills. Alternatively, the curriculum should be targeted only to teachers for whom it is well matched in terms of preparation. • Curriculum should be designed for and accessible to all children and their teachers. Curriculum development must consider the accessibility of content as well as the resources available to all children and teachers. • Underscoring the importance of fidelity, some studies have found that fidelity of implementation predicted children's gains using preschool math curriculum (Sarama et al., 2008), language and literacy curriculum (Hamre et al., 2010), and curriculum focused on multiple domains (Maier et al., 2022b). • Instruments that measure fidelity, whether curriculum specific or more general, must assess more than just adherence or dosage, but the quality of the environment and teaching, including those characteristics empirically connected to children's learning and development (e.g., Clements et al., 2011; Sarama & Clements, 2021; see	• To what extent is the curriculum implementable at a high level of quality by teachers with a wide range of preparation and skills? OR To what extent is the curriculum well matched with the level of preparation and skills of teachers? • To what extent is the curriculum designed for and accessible to all children and their teachers? • To what extent does the curriculum consider the accessibility of content as well as the resources available to all children and teachers? • To what extent does the curriculum support measuring implementation fidelity? To what extent do fidelity tools address issues of equity and the lived experiences of children from marginalized communities?

Elements of Curriculum Quality and Report Sources	Description of Elements of Curriculum Quality	Questions to Ask When Considering Elements of Curriculum Quality
	Chapters 2 and 9). Similarly, the measures must use models that consider the way "quality" is defined; research notes that definitions of quality often fail to address issues of equity and the lived experiences of children from marginalized communities (García Coll et al.; Iruka et al., 2022; Marks & García Coll, 2018; Phillips et al., 2022).	
26 **Uses appropriate technology** *Report sources:* 171, 172, 173	High-quality curriculum may employ a wide range of types of software and pedagogical approaches that have been shown to benefit teaching and learning. They include, for example, practice; technological manipulatives; simulations; exploratory environments; programming (coding); digital books; games; and creative development of text, art, music, and videos. • Research shows that high-quality software, implemented well, can contribute to the curriculum (e.g., Burnett, 2010; Clements & Sarama, 2003; Cuban, 2001; Hartle, 2020; Herodotou, 2018; Hsin et al., 2014; Larkin et al., 2022). Young children prefer technology that differentiates tasks, offering more support or more challenge when indicated for individuals, and that provides children with choices and autonomy (LeSage & Ruttenberg-Rozen, 2021). • Technology also can make special contributions for children with disabilities, including and beyond assistive technologies (Clements et al., 2021b). • Technology-based curriculum tools and resources should avoid common limitations on quality, such as missing instructions, poor feedback (corrective only, not	• To what extent does technology differentiate tasks, offer more support or more challenge when indicated for individuals, and provide children with choices and autonomy? • To what extent does technology make special contributions for children with disabilities, including and beyond assistive technologies? • To what extent is technology free from missing instructions, poor feedback (corrective only, not informative), ineffective guidance and modeling on how to solve a problem that children could not solve, and lack of responsiveness to children's individual levels of thinking? • To what extent does technology support formative assessment? • To what extent does technology serve

Elements of Curriculum Quality and Report Sources	Description of Elements of Curriculum Quality	Questions to Ask When Considering Elements of Curriculum Quality
	informative), ineffective guidance and modeling on how to solve a problem that children could not solve, and lack of responsiveness to children's individual levels of thinking. Young children prefer technology that differentiates tasks, offering more support or more challenge when indicated for individuals, and that provides children with choices and autonomy (LeSage & Ruttenberg-Rozen, 2021). • Building formative assessment into digital curricula and then doing fine-grained research to evaluate and refine it continually is a promising avenue for educational technology. As a research example, missing even one important characteristic, such as individualizing according to children's needs, resulted in the lack of any gains from a digital program in literacy for children entering with low literacy scores (Kreskey & Truscott, 2016). • As with any curriculum component, the choice of software needs to serve the goal for learning and be based on evidence. • High-quality technology experiences can facilitate positive social-emotional development (Clements & Sarama, 2003). According to a review of 87 studies, most studies showed that technology use enhances children's collaboration and interaction with others and, for some, their development of cultural identity (Hsin et al., 2014). • Web-based tools can offer multimedia that contribute to the understanding of children's learning, as well as teaching	learning goals and is it based on evidence? • To what extent does technology facilitate positive social-emotional development, including children's collaboration and interaction with others and development of cultural identity? • To what extent does technology offer multimedia that contributes to the understanding of children's learning as well as teaching strategies consistent with children's needs? • To what extent does the design and content of technology, even that for children, contribute to teachers' professional development? • To what extent do digital curriculum resources offer a wide variety of ways to support teachers in interacting with children around domains and implementing curricula in new ways, providing personalized learning, and melding formative and summative assessments?

Elements of Curriculum Quality and Report Sources	Description of Elements of Curriculum Quality	Questions to Ask When Considering Elements of Curriculum Quality
	strategies consistent with children's needs (Clements & Sarama, 2017/2023). • Digital curriculum resources, compared with traditional text versions, offer curriculum developers a wide variety of ways to support teachers in interacting with children around domains and implementing curricula in new ways, providing personalized learning, and melding formative and summative assessments (Pepin et al., 2017).	
27 **Leverages appropriate curriculum developers' expertise** *Report sources:* *175*, *176*	Curricula that are developed by and for members of a specific group may benefit from using published research on and involving consultants with expertise in the various content domains. For curricula that are to be widely disseminated, the converse is true: literature and writing partners or consultants from all communities intended as audiences for the curricula need to be involved in all phases of research and development.	• To what extent did the curriculum developers use published research on and involve consultants with expertise in various content domains? • To what extent did the curriculum developers involve literature and writing partners or consultants from all communities intended as audiences for the curriculum in all phases of research and development?

Elements of Curriculum Quality and Report Sources	Description of Elements of Curriculum Quality	Questions to Ask When Considering Elements of Curriculum Quality
28 **Horizontally and vertically aligned** *Report sources:* 13, 339	Developing consistency in curricula across early childhood programs, including both horizontal and vertical alignment, is a key consideration for policy makers (Little & Gragson, 2023).With follow-through [in the curriculum], children's preschool learning and development are more likely to continue on a positive trajectory (Ansari & Pianta, 2018; but see cautions in Bailey et al., 2019; Carr, 2021; Carr et al., 2019; Jenkins et al., 2018; Pearman et al., 2019; Sarama & Clements, 2015b; Unterman & Weiland, 2019). • Curriculum developers should consider coherence in the curricular vision across the transition from preschool to the early grades. • Curricular alignment for preschool through third grade could be particularly beneficial in reducing opportunity gaps and disparities in learning outcomes for multilingual learners, children with disabilities, and children from families with low income (Demanchick et al., 2009; Garland, 2011; Jacobson, 2009; National Academies, 2023; Rice, 2008; Severns, 2012).	• To what extent is there coherence in the curricular vision across the transition from preschool to the early elementary grades? • To what extent does the curriculum demonstrate alignment horizontally (with standards and assessments) and vertically (with curriculum for adjacent age levels)?

Elements of Curriculum Quality and Report Sources	Description of Elements of Curriculum Quality	Questions to Ask When Considering Elements of Curriculum Quality
29 **Provides appropriate approaches for Indigenous communities (invested in language revitalization and maintenance)** *Report sources:* 8, 79, 80, 309	Curriculum developers and educators should consider the unique approach warranted in Indigenous communities that are invested in language revitalization and maintenance. In Indigenous communities, a broader [curricular] perspective recognizes the intricate web of relationships between teachers and students, the learning environment itself, and the underlying philosophies about education and knowledge acquisition. This holistic approach, often referred to as "culture-based education," holds immense potential for improving educational outcomes for Indigenous students. • For example, building on findings showing that young children are astute cultural learners, Rogoff et al. (2015) studied the learning behaviors of children in Indigenous American communities, documenting differences in the learning behaviors and experiences of children growing up in different cultural contexts. Their Learning by Observing and Pitching In (LOPI) model characterizes a kind of learning that is common in, but not exclusive to, Indigenous American communities (Rogoff et al., 2015; Figure 3-2). LOPI is deeply embedded in the cultures of Indigenous American communities and is consistent with many other practices and values of these communities. • LOPI consists of seven related facets, with the central facet being that the learner is incorporated in, and contributing to, meaningful family and community endeavors. LOPI involves wide-lens observing and listening-in on mature, purposive adult activities and conversations, being guided by members	• To what extent does the curriculum support "culture-based education" in indigenous communities? • To what extent does the curriculum include wide-lens observing and listening-in on mature, purposive adult activities and conversations, being guided by members of the community to contribute meaningfully to communal goals and cultural activities? • To what extent does the curriculum support heritage language revitalization (bringing children together with fluent speakers for acquisition)? • To what extent is Indigenous language and culture incorporated into curriculum materials, such as history, songs, and stories? • To what extent does the curriculum include strong, additive, and academically rigorous programs on language maintenance and achievement? • To what extent does the curriculum not hinder English acquisition? • To what extent does the curriculum support

Elements of Curriculum Quality and Report Sources	Description of Elements of Curriculum Quality	Questions to Ask When Considering Elements of Curriculum Quality
	of the community to contribute meaningfully to communal goals and cultural activities, which increases their sense of belonging. • Building on the LOPI model, Bang et al. (2015) highlight the more-than-human ecological interactions of Menominee Indian communities in Wisconsin, extending the LOPI model to include human–nature as well as human–human interactions to include wide-lens attention to human interactions with animals, plants, and non-animate natural kinds, such as water). • For Indigenous communities facing the threat of language extinction, heritage language revitalization efforts are not just urgent—they are seen as vital to cultural identity and community well-being. • While acknowledging the importance of essential skills and English proficiency for academic advancement, community members recognize the unique role their language plays in maintaining and restoring their heritage. Bringing children together with fluent speakers for language acquisition is crucial. • Studies highlight the positive impact of "strong, additive, and academically rigorous" programs on language maintenance and achievement. Evidence shows that strong programs do not hinder English acquisition and can even enhance student performance mirroring the research on emergent bilingualism. Most importantly, community-driven programs	a community-driven program with local control?

Curriculum Domains and Content Areas and Report Sources	Description of Elements of Curriculum Quality for Domains and Content Areas	Questions to Ask When Considering Elements of Curriculum Quality for Each Domain and Content Area
30 **Social and emotional learning** *Report sources:* 82, 132, 139, 140, 141	Decades of research have made clear that early emotional development —evidenced by the ability to identify and express one's own emotional states, accurately recognize emotions expressed by others, and adaptively regulate intense emotions—is key to adaptive success in childhood and later life (National Research Council [NRC] & Institute of Medicine [IOM], 2000). Evidence also shows that these skills can be fostered and enhanced in early childhood learning environments (Denham, 2019). These features of emotional competence—emotion knowledge; understanding of the causes, consequences, and display rules of an emotion (Izard et al., 2011); and the ability to regulate emotion—then foster the development of social skills. Together, social-emotional skills facilitate meaningful interpersonal relationships and interactions characterized by prosocial behavior, empathy, and interpersonal connectedness with peers. • SEL is and must be a major domain in preschool curriculum. SEL must also attend to the structure of power by ensuring that children, including children with privilege, are aware of their identity and others and that they co-create a community of agency and belonging. • Effective curricula and approaches promote incremental and sequential SEL; a theme-based curriculum needs to be supplemented with a curriculum or approach that provides such learning experiences (Burchinal et al., 2022). A	• To what extent does the curriculum support social and emotional learning, including the ability to identify and express one's own emotional states, accurately recognize emotions expressed by others, adaptively regulate intense emotions, understand the causes, consequences, and display rules of an emotion, facilitate meaningful interpersonal relationships and interactions characterized by prosocial behavior, empathy, and interpersonal connectedness with peers? • To what extent does the curriculum help children to learn cognitive problem-solving strategies that teach children to think about consequences and alternatives before acting? • To what extent does the curriculum help create a classroom where children co-create a community of agency and belonging? • To what extent are SEL strategies embedded in everyday classroom activities? • To what extent does the curriculum promote incremental and sequential SEL development? Are social-emotional skills

Curriculum Domains and Content Areas and Report Sources	Description of Elements of Curriculum Quality for Domains and Content Areas	Questions to Ask When Considering Elements of Curriculum Quality for Each Domain and Content Area
	suggested progression is to begin with identifying and labeling feelings such as happy, sad, mad, and scared and then progress to others, such as frustrated, jealous, or disappointed (Burchinal et al., 2022). • SEL is not often discussed as a "content" domain, but does have conceptual or "content" aspects. These include the recognition, understanding, and appropriate expression of emotions, known as emotional literacy and language, and emotional self-regulation (Joseph et al., 2021), as well as cognitive problem-solving strategies that teach children to think about consequences and alternatives before acting (Fox & Hemmeter, 2009; Joseph & Strain, 2010; Sarama et al., 2017a; Webster-Stratton et al., 2001). These are important aspects of social-emotional development and the learning of social studies. • Children learn about how people feel and interact by observing, asking questions, and discussing peoples' feelings and interactions with trusted adults. They also learn from lessons in understanding others and their perspectives, taking turns cooperating, and dealing with conflict. They develop social-emotional understanding and competencies better when teachers use classroom experiences intentionally to discuss feelings, strategies for resolving conflicts, or collaborative decision making (Burchinal et al., 2022; IOM & NRC, 2015). • Similarly, effective social-emotional development is	intentionally taught, including through scheduled, sequenced lessons emphasizing small group work? • To what extent does the curriculum provide guidance for individualized interventions for children with challenging behaviors (especially those that use functional assessment of the relationship between the challenging behaviors and the child's environment and that adapt the environment)? • To what extent does the curriculum include lessons in understanding others and their perspectives, taking turns cooperating, and dealing with conflict? • To what extent does the curriculum support teachers to use classroom experiences intentionally to discuss feelings, strategies for resolving conflicts, and collaborative decision making? • To what extent is social-emotional development integrated into academic skills development, reflecting the interconnectedness of learning and development?

Curriculum Domains and Content Areas and Report Sources	Description of Elements of Curriculum Quality for Domains and Content Areas	Questions to Ask When Considering Elements of Curriculum Quality for Each Domain and Content Area
	fostered by wide-ranging efforts to build positive relationships among educators and children, families, and colleagues and to design supportive and engaging environments (Blewitt et al., 2020). • Recognizing and incorporating children's backgrounds, languages, and experiences fosters positive social-emotional experiences and makes learning more relevant and engaging (Burchinal et al., 2022). • Strategies that nurture the academic and social development of young Black children in low-socioeconomic communities include building strong positive relationships with students, creating a safe and supportive learning environment, fostering teacher–family partnerships, building confidence, providing education resources, and holding students to high expectations (Karaya, 2022). New approaches to addressing inequities and injustices have been proposed for curriculum, teaching, and research that need to be explored and investigated (e.g., Souto-Manning, 2023). • Approaches that focus on not only academics or social-emotional development but both simultaneously recognize that social-emotional skills provide an essential foundation for learning (Wackerle-Hollman et al., 2021) In a new vision for curriculum, skills would be integrated, and teachers would not be able to focus solely on social-emotional development, language and literacy, or	

Curriculum Domains and Content Areas and Report Sources	Description of Elements of Curriculum Quality for Domains and Content Areas	Questions to Ask When Considering Elements of Curriculum Quality for Each Domain and Content Area
	mathematics. Rather curricula would encompass the whole child and recognize the interconnectedness of learning and development. • Some educators express concern that SEL might be stifled when early education experiences focus on academic content. Although these concerns may be legitimate when methods for supporting content learning are inappropriate for young children, research is clear that, given appropriate pedagogy, young children can learn across academic domains throughout early childhood with no adverse effects on other developmental domains (Le et al., 2019). Teaching of those content domains that aligns with research can have positive effects on the development of social-emotional and other general competencies, such as executive function and self-regulation (e.g., Burchinal et al., 2022; Chernyak et al., 2022). • A review of research on early childhood SEL interventions concludes that the more effective programs include professional development of educators, stress management for educators, and embedding strategies in everyday classroom activities (McClelland et al., 2017). • Intentionally teaching social-emotional skills, including scheduled, sequenced lessons emphasizing small-group work, develops preschoolers' social problem solving (Burchinal et al., 2022), their ability to identify and discuss	

Curriculum Domains and Content Areas and Report Sources	Description of Elements of Curriculum Quality for Domains and Content Areas	Questions to Ask When Considering Elements of Curriculum Quality for Each Domain and Content Area
	feelings, and their use of verbal mediation. Such teaching may include individualized interventions for children with challenging behaviors (especially those that use functional assessment of the relationship between the challenging behaviors and the child's environment and that adapt the environment [Dunlap et al., 2006]). Literature, videos, photographs, puppet shows, familiar situations, role playing, and specific classroom incidents can help provide educational experiences. New understandings and skills need to be implemented in staged activities and within and across classroom activities and routines to provide repeated experiences and generalization.	
31 **Executive functioning** *Report sources:* 83, 85	Executive functioning skills include working memory, inhibitory control, attention shifting, and cognitive flexibility (Miyake et al., 2000). • Research suggests that curricula that engage children in mathematical thinking have spillover effects that are beneficial to executive function, and in fact work better than a curriculum that focuses on both mathematics and executive functioning skills. • There is also some evidence that early education programs that directly support children's executive functioning skills are beneficial. For example, Montessori and Tools of the Mind curricula, where teachers are trained to exercise	• To what extent do curriculum activities support executive functioning skills (i.e. working memory, inhibitory control, attention shifting, and cognitive flexibility)?

Curriculum Domains and Content Areas and Report Sources	Description of Elements of Curriculum Quality for Domains and Content Areas	Questions to Ask When Considering Elements of Curriculum Quality for Each Domain and Content Area
	children's executive functioning skills, improve these skills more effectively than did curricula in control classrooms (Diamond et al., 2019; Lillard & Else-Quest, 2006).	
32 **Language and literacy** *Report sources:* 86, 87, 143, 144, 145, 146, 147, 148	Essential foundations such as language comprehension and production, print knowledge (Piasta et al., 2012), and content knowledge can develop early. • Preschool children who hear more words and a more diverse set of words show higher levels of vocabulary knowledge (e.g., Huttenlocher et al., 1991). Similarly, Huttenlocher et al. (2002) found that when teachers used more complex sentences in school (defined as sentences including more than one clause), children had better comprehension of complex sentences at the end of the school year, after controlling for the overall quality of the classroom environment and children's comprehension of complex sentences at the beginning of the year. • Relatedly, asking children open-ended questions supports their language development as well as their autobiographical memory skills; this is the case in the context of both play and book reading (Boland et al., 2003; Fivush et al., 2006; Rowe et al., 2016). Open-ended questions actively engage children in conversations, with positive effects on their language development and on their learning more generally. Further, open-ended questions provide adults with a window into children's	• To what extent does the curriculum support teachers to use diverse oral language to support vocabulary knowledge and complex sentence structures to support comprehension of complex sentences? • To what extent does the curriculum prompt teachers to ask open-ended questions in the context of play and book reading, actively engaging children in conversations? • To what extent does the curriculum include guidance and support for dialogic, interactive book reading? • To what extent does the curriculum include books that reflect the backgrounds and identities of children in the classroom? • To what extent does the curriculum include a focus on alphabet knowledge, phonological awareness, concepts of print, early writing, and oral language (comprehension and production)?

Curriculum Domains and Content Areas and Report Sources	Description of Elements of Curriculum Quality for Domains and Content Areas	Questions to Ask When Considering Elements of Curriculum Quality for Each Domain and Content Area
	language skills and thinking, which can guide the scaffolding of language development. • Dialogic reading, characterized by questions and prompts that evoke participation by children, has been shown to benefit children's language skills, including their vocabulary and narrative skills, both immediately after interventions and after delays. • Another aspect of shared book reading that is important in supporting children's identity development and sense of belongingness is seeing themselves depicted in the books (discussed in more detail in Chapter 4). However, racially minoritized (Adukia et al., 2021) and female characters are underrepresented in children's books (Casey et al., 2021). These findings are important, as depictions in books provide children with cues as to what is possible for them, and the underrepresentation of certain groups serves to limit possibilities for children in those groups. • Foundational knowledge and skills that are the forerunners of conventional reading and writing include alphabet knowledge, phonological awareness, concepts of print, early writing, and oral language. • Some curricula teach primarily letter names or teach letter names before letter sounds (phonics), but research shows that teaching letter names and sounds simultaneously leads to greater learning.	• To what extent are letter names and sounds taught simultaneously? • To what extent does the curriculum include guidance for differentiated teaching based on formative assessment in small groups targeted to each child's letter and sound knowledge and sequenced to teacher easier letters (e.g. letters in a child's name), such as A, B, and X, before more difficult letters, such as Q, U, and V? • To what extent does the curriculum teach both upper and lowercase letters together? • To what extent does the curriculum combine brief (10-15 minutes), fast-paced, explicit letter-name and letter-sound teaching that includes embedded mnemonics? • To what extent does the curriculum NOT include multisensory techniques, letters within contexts, or combined alphabet and phonological awareness? • Does the curriculum include guidance for teachers to provide specific language scaffolds during book-reading activities,

Curriculum Domains and Content Areas and Report Sources	Description of Elements of Curriculum Quality for Domains and Content Areas	Questions to Ask When Considering Elements of Curriculum Quality for Each Domain and Content Area
	• Some curricula develop letters through whole-group instruction; however, differentiating teaching based on formative assessment and teaching primarily in small groups is more effective (Piasta, 2014, 2023). Such instruction also is more effective if targeted to each child's letter and sound knowledge and if sequenced to teach easier letters (e.g., letters in a child's name; note that letter sounds are not so sequenced), such as A, B, and X, before more difficult letters, such as Q, U, and V (Piasta, 2023; Piasta et al., 2022). • Some curricula teach all uppercase letters before any lowercase letters. Children do recognize uppercase letters more easily, but once they can name one, they can learn the lowercase version without waiting to learn the full uppercase alphabet (Piasta, 2023). • Research supports combining brief (approximately 10–15 minutes), fast-paced, explicit letter-name and letter-sound teaching that includes embedded mnemonics. • Research does not support other popular approaches, such as teaching using multisensory techniques, letters within contexts, or combined alphabet and phonological awareness • Book Reading: In a similar vein, specific language scaffolds during book-reading activities promote children's	especially for populations who have experienced being marginalized? • To what extent does the curriculum include explicit, structured activities targeting awareness of the written language and phonological features of language? • To what extent does the curriculum include oral storytelling and story acting? • To what extent does the curriculum include intentional use of literacy artifacts in dramatic play and throughout the learning environment and brief, clear, systematic, and explicit instruction in letter names, the sound(s) associated with the letters, and how the letters are shaped and formed? • To what extent does the curriculum support teachers to teach subject-matter content to build the critical foundation for the development of background knowledge, essential for reading comprehension?

Curriculum Domains and Content Areas and Report Sources	Description of Elements of Curriculum Quality for Domains and Content Areas	Questions to Ask When Considering Elements of Curriculum Quality for Each Domain and Content Area
	development of language and literacy, especially for populations who have experienced being marginalized. ○ For example, teachers might reduce the number of possible choices, as in, "What is this part of the animal called? Is it the teeth or the jaw?" (Pentimonti & Justice, 2010, p. 247). Preschool teachers' use of such scaffolds is infrequent, however, so curricula could build them into lessons, emphasizing flexible use based on formative assessment (Pentimonti et al., 2017). For example, to teach the competence of predicting future events in a story, teachers might present possible choices for children just developing the ability, such as, "Do you think Juan will dress up as an animal or superhero for the party?" For children who are further along in developing the ability, the teacher might challenge them to reason and hypothesize by asking, "Why do you think so?" or "Why is it helpful to predict what will happen?" • Young children benefit from integrated and interdisciplinary approaches to teaching content. Arguably, integration is most important for language and literacy, as it gives meaning to their use, develops disciplinary literacy, and develops content knowledge, all with effectiveness equal to that of more siloed approaches (Purpura et al., 2021; Wright & Gotwals, 2023). However, developers consider the focus and interrelationship of curricula and curricular components with the subject and	

Curriculum Domains and Content Areas and Report Sources	Description of Elements of Curriculum Quality for Domains and Content Areas	Questions to Ask When Considering Elements of Curriculum Quality for Each Domain and Content Area
	the children in mind (National Academies, 2022; see the section Integrated and Interdisciplinary Curricula later in this chapter). In literacy, for example, explicit, structured activities targeting awareness of the written language and phonological features of language help children develop early literacy competencies more than informal storybook reading (Justice et al., 2015). • To develop language skills, curricula encourage replacing simple "right or wrong" feedback with discussion of the ideas and strategies that underlie answers. In multiturn conversations, for example, teachers ask several children about their interpretation of a storybook or how they solved a problem and then ask others if they agree with the solution, always inviting multiple children to respond (Justice et al., 2015). • Both interactive book reading and oral storytelling are proven strategies for promoting preschool children's language and early literacy development (IES, 2007; Johnson et al., 2019; Wright et al., 2022; Zucker et al., 2013). Interactive book reading, in which teachers engage children in conversation about the story before, during, and after reading the book, has enormous power to capitalize on the stories that books convey and images they depict to positively represent and support children's identities, cultural experiences, and backgrounds, and to promote equity and inclusion (Armstrong, 2021; Bishop,	

Curriculum Domains and Content Areas and Report Sources	Description of Elements of Curriculum Quality for Domains and Content Areas	Questions to Ask When Considering Elements of Curriculum Quality for Each Domain and Content Area
	1990). • Interactive book reading is one of the most effective ways to promote young children's language learning and early literacy (Institute of Education Sciences [IES], 2007; Zucker et al., 2013), the quality and cultural relevance of the materials matter. [For example,] Rudine Sims Bishop (1990) first identified the critical need for books and curriculum materials that, metaphorically, provide children with "mirrors, windows, and sliding glass doors." (read more here) • Children from historically marginalized groups, especially those who are Black, Indigenous, and Latine, need books and materials with positive images that counteract the racism, stereotypes, and biases they experience every day. • Storytelling: An analysis of the Early Childhood Longitudinal Study, which used a large, nationally representative sample of children born in the United States in 2001, demonstrated for the first time that Black preschoolers' oral-storytelling abilities are positively related to their kindergarten early literacy skills (Gardner-Neblett & Iruka, 2015). The study found that storytelling abilities in preschool predicted early literacy in kindergarten for Black children from both low- and higher-income families, but not for children from other racial and ethnic groups.	

Curriculum Domains and Content Areas and Report Sources	Description of Elements of Curriculum Quality for Domains and Content Areas	Questions to Ask When Considering Elements of Curriculum Quality for Each Domain and Content Area
	• Oral storytelling and its presence in children's literature supports the development of a healthy, positive self-identity in Black children (Johnson et al., 2019; Wright & Counsell, 2018). • Another research-validated curriculum component is storytelling and story acting (STSA), a structured practice that exemplifies child-centered, play-based, and constructivist approaches that can operate as a module in various curricula. During learning-center or free play times, any child can choose to dictate a story to a teacher or assistant teacher, who records it. Later, the teacher reads each story to the class as the author, and other children they choose, act out the story. In an experiment, the addition of an STSA component increased preschoolers' narrative comprehension, print and word awareness, pretend abilities, and self-regulation; it also reduced play disruption (Nicolopoulou et al., 2015). • A large base of studies beyond the scope of this chapter, and multiple resources based on this research provide substantial guidance and specific practices (e.g., Cabell et al., 2023; Clements & Wright, 2022). For example, the Michigan Association of Intermediate School Administrators' General Education Leadership Network Early Literacy Task Force (General Education Leadership Network [GELN], 2023) produced a strongly referenced, research-based guide to essential practices for preschool.	

Curriculum Domains and Content Areas and Report Sources	Description of Elements of Curriculum Quality for Domains and Content Areas	Questions to Ask When Considering Elements of Curriculum Quality for Each Domain and Content Area
	Among the 10 practices are "intentional use of literacy artifacts in dramatic play and throughout the learning environment" and "brief, clear, systematic, and explicit instruction in letter names, the sound(s) associated with the letters, and how the letters are shaped and formed," along with others on read-alouds with reference to print, vocabulary, and comprehension; writing; rich conversations; assessment; abundant materials; and collaboration with families (GELN, 2023, pp. 3, 5). • The entire recent literacy research corpus also emphasizes explicit support for teaching subject-matter content as a critical foundation for the development of background knowledge that is essential for reading comprehension. • Some preschool curricula use large-group lessons and move all children through the same activities (e.g., "letter of the week" approaches), minimizing individualization. Effective curricula embed consistent formative assessment to adapt instruction to children's current level of knowledge and skill. • One of the most effective ways to build children's language and literacy skills is an interactive picture book–reading technique called "dialogic reading" (IES, 2007). While reading books with children individually or in small groups, the teacher uses five types of increasingly complex prompts or questioning strategies that stimulate the children's language interaction.	

Curriculum Domains and Content Areas and Report Sources	Description of Elements of Curriculum Quality for Domains and Content Areas	Questions to Ask When Considering Elements of Curriculum Quality for Each Domain and Content Area
33 **Math** *Report sources:* 89, 91, 148, 149, 150, 151, 152, 153, 154, 155	Early math skills include numerical skills, spatial skills, understanding of patterns, and understanding of data and measurement (NRC, 2009). Within the numerical domain, children typically learn the count list and how to use it to enumerate the number of objects in a set. Notably, during the preschool years, children gain an understanding of key counting principles, including (1) the one-one principle (each item should be tagged by a count word once and only once), (2) the stable-order principle (count words must be ordered in the same sequence each time a count is carried out, (3) the cardinal principle (the number word used to tag the last item is the summary symbol for the set size, (4) the abstraction principle (any set can be counted), and (5) the order-irrelevance principle (the items in a set can be tagged in any order; Gelman & Galistel, 1978). They also gain the ability to order sets, to compare the magnitude of sets, to compose and decompose sets, and to carry out simple calculations (e.g., Clements & Sarama, 2014; Feigenson et al., 2004; Fuson, 1988; Le Corre & Carey, 2007; Litkowski et al., 2020; Sarama & Clements, 2009; Wynn, 1992). • Early math skills include two core areas: numerical thinking, which includes understanding whole numbers, operations, and relations; and geometry, spatial thinking, and measurement. Additionally, young children learn to notice relations and patterns, to reason about these relations, and to communicate their mathematical ideas (see NRC, 2009, for review). During the preschool years,	• To what extent does the curriculum include a focus on early math skills, including numerical skills, spatial skills, understanding of patterns, and understanding of data and measurement? ○ Numerical skills: key counting principles, including (1) the one-one principle (each item should be tagged by a count word once and only once), (2) the stable-order principle (count words must be ordered in the same sequence each time a count is carried out, (3) the cardinal principle (the number word used to tag the last item is the summary symbol for the set size, (4) the abstraction principle (any set can be counted), and (5) the order-irrelevance principle (the items in a set can be tagged in any order; ordering sets; comparing the magnitude of sets; composing and decomposing sets; carrying out simple calculations. ○ Understanding of patterns: noticing relations and patterns; reasoning about relations; communicating mathematical ideas ○ Spatial skills: ability to categorize shapes based on their defining features;

Curriculum Domains and Content Areas and Report Sources	Description of Elements of Curriculum Quality for Domains and Content Areas	Questions to Ask When Considering Elements of Curriculum Quality for Each Domain and Content Area
	for example, children gain foundational spatial skills, including the ability to categorize shapes based on their defining features; to compose and decompose shapes; to mentally manipulate shapes; and to represent relations among environmental entities, as well as the self and environmental entities (e.g., Casasola et al., 2020; Fisher et al., 2013; Hawes et al., 2015; Levine et al., 1999; Newcombe & Huttenlocher, 2003; Pruden et al., 2011). Moreover, children's numerical and spatial skills are highly related, and some researchers argue that mathematics is inherently spatial (e.g., Clements & Sarama, 2011; Dehaene, 1997; Verdine et al., 2017). Teaching young children spatial skills—either mental transformation skills or visuospatial working memory skills—also leads to improvements in performance on numerical tasks (Cheng & Mix, 2014; Mix et al., 2021). • In addition, as for language development, actively engaging children in mathematical thinking through prompting and question asking has been found to be an effective way to support children's math learning (Eason et al., 2021). • Young children's math learning benefits when input is tuned to their knowledge levels, and that such a focus on math learning does not take away from but benefits their learning of language and literacy skills. • More research is needed to examine culturally responsive,	composing and decomposing shapes; mentally manipulating/transforming shapes; representing relations among environmental entities as well as the self and environmental entities; visuospatial working memory skills. • To what extent does the curriculum actively engage children in mathematical thinking through prompting and question asking? • To what extent does the math curriculum support teachers to adapt the curriculum to children's knowledge levels in other domains, such as language and literacy, such that a focus on math learning benefits their learning of language and literacy skills? • To what extent is math instruction culturally responsive and strengths-based? • To what extent does the curriculum support teachers to structure lessons involving mathematics that are challenging but achievable for each child? • To what extent does the curriculum help teachers to understand developmental progressions in math and ways to assess and

Curriculum Domains and Content Areas and Report Sources	Description of Elements of Curriculum Quality for Domains and Content Areas	Questions to Ask When Considering Elements of Curriculum Quality for Each Domain and Content Area
	strengths-based math instruction with young children, although existing evidence indicates that this instructional approach is likely to be beneficial. • There is a large research corpus on teaching early mathematics (Baroody et al., 2019; Burchinal et al., 2022; Clements & Sarama, 2021; Clements et al., 2023a; Frye et al., 2013; NRC, 2009; Nunes et al., 2016; Sarama & Clements, 2009b). High-quality curricula build on that base. For example, curricula that support teachers in structuring lessons involving mathematics that are challenging but achievable for each child promote children's learning in important and often neglected ways (Sullivan et al., 2015). Curriculum developers know and apply domain-specific research in designing and creating curricula. High-quality curricula help teachers understand developmental progressions in each domain and ways to assess and understand children's level of thinking and learning in each (Clements & Wright, 2022; National Academies, 2022; NRC, 2009). Furthermore, such curricula support multiple ways of representing, expressing, and strategizing mathematics, encouraging mathematical thinking for diverse cultures and individuals. • Different pedagogical approaches can be effective for different goals (Hiebert & Grouws, 2007). For example, when the goal is only learning facts, procedures, and skills (instrumental understanding, or rules without reasons	understand children's level of thinking and learning in math? • To what extent does the curriculum support multiple ways of representing, expressing, and strategizing mathematics, encouraging mathematical thinking for children from diverse cultures? • To what extent are the pedagogical approaches provided in the curriculum appropriate for the mathematical learning goals? (For example, when the goal is only learning facts, procedures, and skills (instrumental understanding, or rules without reasons [Skemp, 1976]), certain curriculum elements—such as whole-group organization, clear directions and explanations with modeling, fast pace, emphasis on mastery, and careful review—can be effective (Agodini et al., 2010; Carnine et al., 1997; Clark et al., 2012; Gersten, 1985; Heasty et al., 2012). In contrast, goals focused on relational understanding (knowing both what to do and why [Skemp, 1976]) include skills and competencies such as conceptual knowledge, mathematical practices, general cognitive

Curriculum Domains and Content Areas and Report Sources	Description of Elements of Curriculum Quality for Domains and Content Areas	Questions to Ask When Considering Elements of Curriculum Quality for Each Domain and Content Area
	[Skemp, 1976]), certain curriculum elements—such as whole-group organization, clear directions and explanations with modeling, fast pace, emphasis on mastery, and careful review—can be effective (Agodini et al., 2010; Carnine et al., 1997; Clark et al., 2012; Gersten, 1985; Heasty et al., 2012). In contrast, goals focused on relational understanding (knowing both what to do and why [Skemp, 1976]) include skills and competencies such as conceptual knowledge, mathematical practices, general cognitive competencies (e.g., executive function), and positive dispositions (NRC, 2001a). Here, effective teaching strategies include attending explicitly to concepts and connections among facts, skills, and key mathematical ideas with consistent math talk among all participants; creating a shared coherent mathematical structure; and focusing on children struggling with key math ideas (Hiebert & Grouws, 2007; here, "struggle" does not indicate frustration but rather an effort to make sense of mathematics and figure out how to understand or solve a problem without following prescribed procedures). • Relational understanding: Research supports addressing relational understanding, as it promotes more complete mathematical learning and development (Clements & Sarama, 2021; Fuson & Briars, 1990; Gilmore et al., 2017; National Mathematics Advisory Panel, 2008; Özcan & Doğan, 2017) and supports skill fluency, while focusing mainly on skill acquisition (Blöte et al., 2001; Hiebert &	competencies (e.g., executive function), and positive dispositions (NRC, 2001a). Here, effective teaching strategies include attending explicitly to concepts and connections among facts, skills, and key mathematical ideas with consistent math talk among all participants; creating a shared coherent mathematical structure; and focusing on children struggling with key math ideas (Hiebert & Grouws, 2007; here, "struggle" does not indicate frustration but rather an effort to make sense of mathematics and figure out how to understand or solve a problem without following prescribed procedures).) • To what extent does the curriculum have specific supports for developing general cognitive competencies (such as executive functioning) and mathematics? • To what extent does the curriculum support teachers to talk to children about mathematics in their play (and routines) that are a good fit with what children are playing and engage children's thinking and include discussions about math topics with no detriment to play?

Curriculum Domains and Content Areas and Report Sources	Description of Elements of Curriculum Quality for Domains and Content Areas	Questions to Ask When Considering Elements of Curriculum Quality for Each Domain and Content Area
	Grouws, 2007; Knapp et al., 1992). • Essential general cognitive competencies, such as executive function, are strongly related to mathematical learning and achievement (more than to other content domains, in some studies [Clements et al., 2016]). Research suggests that curricula that attend to these relations and build specific supports for developing both general cognitive competences and mathematics yield multiple benefits simultaneously (Blair & Raver, 2014; Clements & Sarama, 2015b; Deaño et al., 2023; Deflorio et al., 2019; Marti et al., 2018; Mulcahy et al., 2021) • Curricula that attend to these relations and build specific supports for the development of both general cognitive competences and math yield multiple benefits simultaneously (Blair & Raver, 2014; Clements & Sarama, 2015b; Deaño et al., 2023; Deflorio et al., 2019; Marti et al., 2018; Mulcahy et al., 2021), particularly for populations that have been historically marginalized (Byers et al., 2018; Clements et al., 2023; Dong et al., 2021). • Teaching for these relational goals is research validated and important to do in collaboration with marginalized families (Sonnenschein et al., 2005). This is consistent with work by African-centered education scholars, who call for giving Black learners of science, technology, engineering, arts, and mathematics (STEAM) "an educational	• To what extent does the curriculum include high-quality guided play, playful, intentional teaching approaches, and guided discovery teaching (with direct instruction at appropriate junctures with discovery- or inquiry-based learning contexts) to support early math learning? (High-quality guided play includes having a clear learning goal; ensuring that children have a degree of choice and agency; and using an understanding of children's thinking and interests to choose strategies, such as open-ended questions, hints, prompts, and modeling.) • To what extent does the curriculum support teachers to see the strengths of all children, even if it includes ideas and expressions that are unfamiliar, to build mathematics from each child's experiences and ideas and support the construction of math ideas (complemented by using a learning trajectories approach, along with culturally responsive teaching)? • To what extent does the curriculum combine brief, active, whole-group sessions; individual

Curriculum Domains and Content Areas and Report Sources	Description of Elements of Curriculum Quality for Domains and Content Areas	Questions to Ask When Considering Elements of Curriculum Quality for Each Domain and Content Area
	experience that is relatable, relevant, and engaging" (Bailey et al., 2023, p. 8), but also argue the importance of not seeing mathematics and STEM writ large as neutral because of European epistemology centered in mathematics and science (e.g., Bailey et al., 2023; Martin, 2009; Wright et al., 2016). • High-quality mathematics and free play need not compete for time; doing both makes each richer. Research shows that talking to children about mathematics in their play promotes learning (Helenius et al., 2016; van Oers, 2010). Specifically, interactions that are a good fit with what children are playing and those that engage children's thinking and include discussions about math topics promote math achievement with no detriment to their play (Trawick-Smith et al., 2016). Therefore, it is effective for educators to seek and use teachable moments in everyday play and routines (Lehrl et al., 2017) and attend to all children, including very young children, who may not be seen as "doing mathematics" (Björklund & Barendregt, 2016), while recognizing that these moments will constitute only a small portion of the math activities needed in most cases. • Other approaches to play help children learn mathematics reliably. A systematic review of free play, guided play, and direct instruction found that guided play was particularly important in mathematics, with a greater positive effect	work (sometimes using educational technology); incidental learning throughout the day; and small-group sessions to support math learning?

Curriculum Domains and Content Areas and Report Sources	Description of Elements of Curriculum Quality for Domains and Content Areas	Questions to Ask When Considering Elements of Curriculum Quality for Each Domain and Content Area
	than direct instruction on early math learning overall and shape recognition specifically, and greater positive effect than free play on spatial vocabulary (Skene et al., 2022). This finding is consistent with research-validated experiments showing that guided play and playful teaching approaches are more effective than unguided play (Clements & Sarama, 2007), especially for children with fewer previous opportunities to learn mathematics (Clements et al., 2021b; Lewis Presser et al., 2015). Indeed, the guided approach supports equitable education (Fidjeland et al., 2023; Finders et al., 2023; Gawthorpe & Davidson, 2023). • Programs based only on an "everyday" or "play" approach to math education frequently show negligible gains. In comparison, approaches that focus on subject-matter content have strong, consistent, positive effects (Fuller et al., 2017) without impeding social-emotional development (Le et al., 2019). High-quality guided play (see Pound, 2017; van Oers & Poland, 2012) includes having a clear learning goal; ensuring that children have a degree of choice and agency; and using an understanding of children's thinking and interests to choose strategies, such as open-ended questions, hints, prompts, and modeling (see also Gawthorpe & Davidson, 2023; Gervasoni, 2018; Skene et al., 2022). • A playful but intentional teaching approach is more	

Curriculum Domains and Content Areas and Report Sources	Description of Elements of Curriculum Quality for Domains and Content Areas	Questions to Ask When Considering Elements of Curriculum Quality for Each Domain and Content Area
	effective in promoting math learning than are laissez-faire approaches or teaching based only on "teachable moments" (Ginsburg et al., 2008; Helenius, 2017; Knaus, 2017; Lai et al., 2018; Lehrl et al., 2017), including in free-play contexts such as block centers (Schmitt et al., 2018; Trawick-Smith et al., 2016). This is especially true for children with disabilities (Hojnoski et al., 2018). • Guided discovery has been found more effective than unguided discovery teaching (Baroody et al., 2014, 2019; Paliwal & Baroody, 2020; but see also Clark et al., 2012) and better at developing concepts compared with direct instruction alone (de Jong et al., 2023). • Direct instruction is important in a multidimensional pedagogical toolkit, including at appropriate junctures with discovery- or inquiry-based learning contexts (de Jong et al., 2023; Geary et al., 2019). • Intentional, playful experiences and guided discovery approaches develop deep understanding and transfer to new situations that are needed for relational understanding in all math topics (Clements & Sarama, 2021; Weisberg et al., 2015), such that children engage with mathematics beyond interactions with teachers (Gawthorpe & Davidson, 2023). While strategies from the pedagogical toolkit are best deployed depending on the content, context, and children, those who explore math ideas playfully before intentional instruction use a greater	

Curriculum Domains and Content Areas and Report Sources	Description of Elements of Curriculum Quality for Domains and Content Areas	Questions to Ask When Considering Elements of Curriculum Quality for Each Domain and Content Area
	variety of strategies and attend to the features of problems more than do those instructed first (DeCaro & Rittle-Johnson, 2012). Some preschool math curricula include such play-based sessions. • Educators teaching for relational understanding view children as active learners who initiate explorations of and interactions with the surrounding world and both adults and peers (Burchinal et al., 2022; Cobb, 2000; DeVries et al., 2002; Fröbel, 1885; Gelman, 1994; NRC, 2001b; Piaget, 1973; Samuelsson et al., 2006; Yoshikawa et al., 2013). They avoid a preponderance of passive "reception" of knowledge, understanding that children construct knowledge from a wide variety of experiences (Clements, 1997), including direct instruction, when it contributes to their learning. Such experiences support learning and development and minimize time wasted in passive experiences, such as waiting (La Paro et al., 2009). Teachers support learning by using an equity lens to watch and listen to children and the way they express their ideas (Delpit, 1988, 2006). Encouraging teachers to see the strengths of all children, even if it includes ideas and expressions that are unfamiliar, allows them to build mathematics from each child's experiences and ideas. This is complemented by using a learning trajectories approach, along with culturally responsive teaching, to support the construction of math ideas (Wright et al., 2016; see also the following section). By observing, interacting, and being	

Curriculum Domains and Content Areas and Report Sources	Description of Elements of Curriculum Quality for Domains and Content Areas	Questions to Ask When Considering Elements of Curriculum Quality for Each Domain and Content Area
	reflective, they base interactions and activities on children's thinking and learning (Burchinal et al., 2022; Samuelsson et al., 2006). In these ways, they promote joyful, engaged learning for all children (Bohart & Procopio, 2022). • There is also a substantial body of research on teaching strategies for relational understanding. For example, research has demonstrated how to structure curricula in such areas as teacher expectations; group size and structure; math talk, discussions, and connections; adapting activities; implementation; formative assessment; examples and nonexamples; collaboration with families and assurance of positive experiences for children from culturally and linguistically diverse backgrounds; and, of course, specific teaching strategies for each math topic (Baroody et al., 2019; Clements & Sarama, 2012, 2021; Clements et al., 2023a; Durden & Curenton, 2018; Ma & Kessel, 2018; NRC, 2009; Nunes et al., 2016; Sarama & Clements, 2019b). As an example, a research review found that multilingual learners with learning disabilities succeed in learning mathematical problem solving when culturally relevant scaffolding, including visual models, is integral to the teaching–learning process (Lei & Xin, 2023). **Learning Trajectories:**	

Curriculum Domains and Content Areas and Report Sources	Description of Elements of Curriculum Quality for Domains and Content Areas	Questions to Ask When Considering Elements of Curriculum Quality for Each Domain and Content Area
	• A critical feature of teaching approaches that develop relational thinking is that they base teaching on an understanding of children's thinking and learning. A research-validated approach that does so and seamlessly integrates goals, children's thinking, and the teacher is the learning trajectories construct (Clements & Sarama, 2014a, 2021; Sarama & Clements, 2009b). • The use of learning trajectories has been research validated in multiple studies (Clements & Sarama, 2007; Clements et al., 2023b; Dumas et al., 2019; Gray-Lobe et al., 2021; Mattera et al., 2021a; Orcan-Kacan et al., 2023; Sarama & Clements, 2019b; Stites & Rakes, 2019; Verschaffel et al., 2019). Teachers in these studies used all the strategies in the previously described multidimensional pedagogical toolkit. Furthermore, they combined brief, active, whole-group sessions; individual work (sometimes using educational technology); incidental learning throughout the day; and small-group sessions. The last were especially important because of the personal involvement and close interactions involved, supporting the understanding and use of children's thinking to differentiate instruction. • Playful, meaningful, content-rich education based on learning trajectories benefits all children and is especially important for children with disabilities (Clements et al., 2021b). For all children with disabilities or math	

Curriculum Domains and Content Areas and Report Sources	Description of Elements of Curriculum Quality for Domains and Content Areas	Questions to Ask When Considering Elements of Curriculum Quality for Each Domain and Content Area
	difficulties, tiered support is important and has been validated as effective (Doabler et al., 2014; Klein et al., 2019). • Teaching with the learning trajectory approach, which is asset-based at its core, while emphasizing culturally responsive teaching and the role of families and of out-of-school experiences, increases identity construction and meaning-making practices for Black boys, supporting their construction of math ideas (Wright et al., 2016). Such efforts are especially important given evidence that Black boys are often considered as less able than their White peers in mathematics (Martin, 2007). Further, the approach has direct empirical support. Black preschoolers engaged in a conceptually grounded, learning trajectories curriculum gained more than other groups (Clements et al., 2011) and their gains persisted into fifth grade (Clements et al., 2023b).	

Curriculum Domains and Content Areas and Report Sources	Description of Elements of Curriculum Quality for Domains and Content Areas	Questions to Ask When Considering Elements of Curriculum Quality for Each Domain and Content Area
34 **Science and Engineering Learning** *Report sources:* 92 93, 156, 157, 158	A recent National Academies (2022) report provides four big ideas about early engineering and science learning in preschool through fifth grade; these are broadly applicable to learning in all domains: "(1) learning is a social and cultural process, (2) learning is a process of identity development, (3) children move through a range of cultural contexts where they learn science and engineering and variations in these contexts shape what and how children learn, and (4) learning in these disciplines is not neutral because the disciplines themselves are not neutral". Engagement in science and engineering learning shares many features with play-based learning—notably, the involvement of agency, exploration, collaboration, and creativity. The power of guided play is also important, as well-designed curricular activities can help children explore and build on their intuitive theories more explicitly (e.g., Shtulman & Walker, 2020). • Taking a strengths-based, culturally responsive approach to science and engineering learning in preschool environments not only helps children learn science but also helps them build identities, among which are self-concepts that include their capability to engage in science and engineering. With respect to building positive science identities, recent research shows that describing science learning actively in terms of "doing science" rather than "being a scientist" supports the interest in science of preschool girls, a group that is often negatively	• To what extent does the curriculum take a strengths-based, culturally responsive approach to science and engineering learning? • To what extent does the curriculum help children build positive science identities, including their capability to engage in science and engineering? • To what extent does the curriculum describe science learning actively in terms of "doing science" rather than "being a scientist"? • To what extent does the curriculum support science and engineering instruction that relates to children's interests and lived experiences? • To what extent does the curriculum include substantive investigation and design; conceptual and pedagogical coherence; support teachers' noticing and understanding of children's learning and development; and provide for flexibility, including suggestions for incorporations from local cultures and adaptations for all children? • To what extent does the curriculum help

Curriculum Domains and Content Areas and Report Sources	Description of Elements of Curriculum Quality for Domains and Content Areas	Questions to Ask When Considering Elements of Curriculum Quality for Each Domain and Content Area
	stereotyped in this regard (Rhodes et al., 2019). The importance of providing science learning opportunities in preschool curricula is highlighted by recent theories suggesting that engaging in science and engineering learning benefits not only learning and interest in these domains but also learning in the language arts, social-emotional learning, and mathematics, as well as the acquisition of critical domain-general skills, including executive function and approaches to learning (Bustamante et al., 2018). • Developing science and engineering instruction that relates to children's interests and lived experiences enhances learning (National Academies, 2022). • Developers of high-quality science and engineering curricula ensure that the materials include substantive investigation and design; are conceptually and pedagogically coherent; support teachers' noticing and understanding of children's learning and development; and provide for flexibility (National Academies, 2022), including suggestions for incorporations from local cultures and adaptations for all children (the former is particularly important, given the marginalization of groups for both scientists and children [Burbanks et al., 2020; National Academies, 2022]). They help orient children to phenomena and design challenges, including collecting, analyzing, and making sense of data. They support	orient children to phenomena and design challenges, including collecting, analyzing, and making sense of data? • To what extent does the curriculum support children's development of explanations, discourse, and design solutions? • To what extent is science and engineering instruction built into activities already taking place in the classroom, providing contextualized experiences that make learning engaging and meaningful? • To what extent does the curriculum include activities that have the potential for developing children's learning and engagement with STEM fields, such as: educational robots, educational games, argumentative interactions, inquiry-based learning and engineering design, drawing and telling about engineers, free play and pretend play, and group activities (rather than solely individual work)? • To what extent does the curriculum include informational texts that promote preschoolers' knowledge of literacy forms and make valuable contributions to phases of

Curriculum Domains and Content Areas and Report Sources	Description of Elements of Curriculum Quality for Domains and Content Areas	Questions to Ask When Considering Elements of Curriculum Quality for Each Domain and Content Area
	children's development of explanations, discourse, and design solutions, the last of which is particularly challenging for preschool teachers (Domínguez & Goldstein, 2020). A promising approach is building science and engineering instruction into activities already taking place in the classroom, thus providing contextualized experiences that make learning engaging and meaningful (Bustamante et al., 2018). A research review identified categories of activities that have potential for developing children's learning and engagement with STEM fields: educational robots, educational games, argumentative interactions, inquiry-based learning and engineering design, drawing and telling about engineers, free play and pretend play, and group membership (Ha et al., 2023). • Informational texts promote preschoolers' knowledge of literacy forms and can make valuable contributions to all phases of learning science and engineering (Clements & Wright, 2022; Hwang & Duke, 2020; Sarama et al., 2017a). High-quality curricula provide tools that help teachers elicit and guide classroom discussions, facilitating children's cognitive and affective engagement with both literacy and science (Mantzicopoulos & Patrick, 2011); they can also support preschoolers' basic concept acquisition and general cognitive competencies (Greenfield et al., 2017; RISE Project, n.d.; Toran et al., 2019).	learning science and engineering? • To what extent does the curriculum provide tools that help teachers elicit and guide classroom discussions, facilitating children's cognitive and affective engagement with both literacy and science, basic concept acquisition and general cognitive competencies? • To what extent does the curriculum help children identify with STEM fields by including a wide range of people working in the field and meaningful STEM topics? • To what extent does the curriculum not center solely on the dominant groups' experiences, resources, language, and ability but meaningfully strengthens children's domain-general skills, such as their approaches to learning and executive function? • To what extent are families engaged in STEM experiences, such as providing materials and resources for home use? • To what extent is the curriculum culturally responsive, using asset-based approaches

Curriculum Domains and Content Areas and Report Sources	Description of Elements of Curriculum Quality for Domains and Content Areas	Questions to Ask When Considering Elements of Curriculum Quality for Each Domain and Content Area
	• High-quality curricula help all children, especially those who are members of marginalized groups, to identify with the STEM fields by including a wide range of people working in the field and meaningful STEM topics. • High-quality STEM experiences have the potential to ensure that children's sociodemographics, such as their race, gender, place, ability, or class, do not determine their ability to meaningfully engage in and contribute to others' learning. This is possible when curricula do not center solely on the dominant groups' experiences, resources, language, and ability but meaningfully strengthen children's domain-general skills, such as their approaches to learning and executive function (Bustamante et al., 2018). As in other domains, engaging families in STEM experiences is an important aspect of preschool education. Although interventions often yield small effects, providing materials and resources for home use appears to be a promising feature (Zucker et al., 2022). • Culturally responsive, asset-based approaches emphasizing the importance of families and of leveraging out-of-school practices help African American males build positive identity and provide meaning-making practices that promote stronger STEM learning (Wright et al., 2016). Although little research has been done in this area, investigating social justice issues such as toxins and other problems in specific, low-resource areas could be pursued	emphasizing the importance of families and of leveraging out-of-school practices (such as investigating social justice issues such as toxins and other problems in specific, low-resource areas)?

Curriculum Domains and Content Areas and Report Sources	Description of Elements of Curriculum Quality for Domains and Content Areas	Questions to Ask When Considering Elements of Curriculum Quality for Each Domain and Content Area
	in future curriculum development projects.	
35 **Other domains** *Report sources:* 5, 158	The Head Start Early Learning Outcomes Framework and state learning standards often include other domains such as the visual and performing arts, physical development and education, health and safety, approaches to learning, and social studies (e.g., Head Start, 2023; Maryland State Department of Education, 2024).	• To what extent does the curriculum address other domains, including: visual and performing arts, physical development and education, health and safety, approaches to learning, and social studies? • To what extent does the curriculum support holistic, healthy development?

Discussion of Specific Curricula

This section offers linked summaries of curriculum types and programs covered in the full report.

The consensus study discusses research pertaining to specific curriculum throughout the report. Links to discussions of specific curriculum types and products within the report are included below:

Comprehensive curricula	• STREAMin3 • Project Approach ○ Children Discovering Their World • Reggio Emilia Approach • Cycle of Inquiry • Montessori Education
Integrated and Interdisciplinary Curricula	• Connect4Learning • Focus on PreK

Domain-specific curriculum	• SEL curriculum
	• Language and Literacy:
	  ○ World of Words
	  ○ Literacy Express
	  ○ Kamehameha Early Education Program (KEEP)
	  ○ Opening the World of Learning (OWL)
	  ○ Doors to Discovery
	• Executive function:
	  ○ Tools of the Mind
	• Math
	  ○ Learning Trajectories Approaches
	  ○ Big Math for Little Kids
	• Science and Engineering
	  ○ Conscious Ingenuity

Curriculum for students with disabilities	• Pyramid Model for Promoting Social Emotional Competence in Infants and Young Children • Building Blocks for Teaching Preschoolers with Special Needs • Assessment, Evaluation, and Programming System (AEPS-3)

	• The Carolina Curriculum for Preschoolers with Special Needs (CCPSN)
	• Curricular approaches for children with Autism Spectrum Disorder:
	  ○ Discrete Trial Training (DTT)
	  ○ Pivotal Response Treatment (PRT) and Strategies for Teaching based on Autism Research
	• Multilingual children with disabilities
	  ○ MTSS
	  ○ Vocabulary, Oral Language, and Academic Readiness (VOLAR)

Indigenous and African-Centered Curricula and Pedagogy	• **Indigenous Curricula and Pedagogy**
	  ○ Making It Work! Connecting Cultural Learning Experiences in American Indian and Alaska Native Classrooms and Communities with the Head Start Child Development and Early Learning Framework (Head Start Early Childhood Learning and Knowledge Center [ECLKC], 2024)
	  ○ Native Culture & Language in the Classroom Observation (American Indian and Alaska Native Head Start Family and Child Experiences Survey 2019 Workgroup, 2021)
	• **African-Centered Curricula and Pedagogy**

How can leaders use the consensus study to support the selection and implementation of high-quality preschool curriculum?

The study discusses the critical role state and local policies, guidance, and supports play in influencing preschool curriculum selection decisions and the quality of implementation, noting that early education leaders can:

- Support the development and transition to high-quality curricula that replace or update existing curricula to be aligned with the new vision;
- Ensure that educators receive professional development, regular in-classroom coaching, and access to the materials that are tied to the implementation of evidence-based curricula, including supports for delivering curricula in children's home language alongside English;
- Create a research-practice-partnerships with diverse researchers and early childhood programs that are willing to engage in research to study curricula and practices aligned with the committee's vision;
- Capture details on curricula being used in programs along with characteristics of the children being served, the quality of programs, and a comprehensive set of outcomes
- Align quality metrics, measures, and rating systems with the new vision of curricula and associated practices;
- Incentivize the adoption and use of high-quality curricula that are in alignment with the new vision; and
- Provide quality improvement supports and resources to address equity and inclusion gaps. *(Source: A New Vision for High-Quality Preschool Curriculum: Policymakers Brief)*

Policy and Practice Recommendations for Implementation

State early education leaders can consider various policy and practice mechanisms to implement the report's recommendations, such as:

- Updating state pre-k curriculum policy, curriculum guidance, and/or pre-k curriculum review process to reflect the quality criteria offered in the consensus study
- Considering supporting the use of evidence-based domain-specific curriculum
- Partnering with researchers and curriculum developers to improve widely used comprehensive curriculum
- Aligning quality improvement system (QIS) curriculum indicators and supports with consensus study recommendations
- Providing technical assistance and targeted funding to provide ongoing PD to support the effective use of evidence-based curricula.

What support is available to help the early learning field use consensus study guidance?

Informed by deep early education field research, including conversations with over 30 state early education leaders and focus groups with 65 preschool teachers, several initiatives are underway to support the early education field's use of the consensus study's recommendations:

State Policy and Implementation	**CCSSO High-Quality Instructional Materials - Pre-K (HQIM-Pre-K) state cohort:** The Council of Chief State School Officers (CCSSO) is creating a cohort of states to develop strategic plans to use the consensus study recommendations to improve the selection and implementation of high-quality pre-k curriculum in their state, with attention to K-3 curriculum alignment. Participating states will receive technical assistance and expert guidance. CCSSO plans to develop a HQIM-Pre-K Policy Roadmap as a field resource, informed by the state cohort work.
Product Reviews	**EdReports pre-k curriculum reviews:** Informed by diverse early education stakeholders, EdReports is developing a process to review pre-k curriculum using the quality criteria discussed in the consensus study. Once developed, EdReports will apply this review process to pre-k curriculum products to offer the early learning field updated, unbiased, and independent curriculum review information to inform pre-k curriculum decisions.
Field-building Resources	**National Institute of Early Education Research (NIEER)** and the **National Association for the Education of Young Children (NAEYC)** are incorporating the consensus study into their field-reaching early education resources.
Evidence Base	**Pre-k curriculum research agenda:** A diverse expert technical advisory group is developing a research agenda to address current gaps in pre-k curriculum research. This agenda will build upon the recommendations outlined in the consensus study and offer a framework for cohesive research projects that can advance the early education field's evidence base in ways that can support high-quality preschool curriculum development and implementation.

What's Next: Looking Ahead

The consensus study and its implementation efforts represent a shared commitment to use research-validated guidance to raise the bar for early childhood curriculum. As research deepens and tools evolve, this guide can serve as a foundation for selecting, adapting, and advocating for high-quality preschool curriculum.

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About EdSolutions

EdSolutions is a mission-driven consulting firm that helps education nonprofits, funders, and public agencies advance equity and impact. We bring deep experience at the intersection of strategy, sustainability, and systems change—supporting dozens of organizations through complex transitions, initiative design, and business model refinement.

Our team offers a dual perspective rooted in nonprofit leadership and philanthropic strategy. We help funders shape initiatives and advise grantees, while guiding nonprofits to restructure for sustainability, grow earned revenue, and adapt to shifting conditions.

Thank you for your support.

This guide was developed based on the feedback of over 30 state and district early childhood education leaders seeking resources to help them leverage the NASEM consensus study in their preschool curriculum quality efforts. We thank these leaders for their feedback and ongoing commitment to high-quality preschool learning experiences. We also thank the Pre-K Curriculum Technical Advisory Group for their expert review and feedback.

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