



[S]ecure and sensitive

[P]layful learning

[R]esponsive relationships

[O]rganized environments

[U]ses evidence-based and engaging curriculum

[T]raining and professional development

The evidence behind SPROUT:

A scientifically based framework for defining quality in early education settings

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INTRODUCTION

A large volume of scientific research identifies the fundamental characteristics of high-quality early education settings, which includes home- and center-based preschool and child care programs. Quality refers to the specific setting *characteristics* that support children's learning and well-being across key domains, including language, literacy, math, and social-emotional competence. We draw upon this research to provide a scientifically based framework for defining early education program quality – SPROUT – that can be used to:

- a. **provide common language** for defining and describing characteristics of quality in early education settings,
- b. **understand the science** that informs how we think about quality in early education settings, and
- c. **supplement existing tools** like quality rating systems that are currently used to examine the quality of early education settings.

Here, we provide a brief summary of the scientific background that supports each element of SPROUT.

Note: Throughout this brief, we use the term *teacher* to reflect the caregivers who work in early education settings, to include teachers, assistants, and aides, irrespective of the particular type of early education setting (e.g., infant/toddler program, preschool, day care).

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SECURE AND SENSITIVE

Secure and sensitive caregiving environments allow children to explore their surroundings and learn from their experiences. When teachers are consistently warm, kind, and attentive, they create a sense of security within the classroom. These early experiences with adults in the classroom are the foundation upon which children construct future teacher relationships, impacting both academic and social success.

OVERVIEW

Quality early education settings provide children with opportunities to enter into and maintain stable, secure relationships with adults who are sensitive to their unique needs. The special bonds between children and their teachers are often described as ‘attachment’, and attachment research consistently shows that young children’s health and well-being is highly dependent on stable access to secure relationships with adults who are sensitive to children’s needs; this includes children’s primary caregivers such as parents and grandparents, as well as teachers, aides, and assistants in early education settings. Programs that provide secure, sensitive environments support the children’s development of stable relationships in which children feel protected by teachers and use them as a base from which to comfortably explore the surrounding environment. In addition, in such settings, teachers are respectful of and knowledgeable about each child’s unique developmental levels as well as their cultural, linguistic, and family background, which in turn guides the adults’ interactions with each child.

THE EVIDENCE

A considerable body of research supports the importance of providing children with stable, secure environments in which adults are acutely sensitive to each child’s developmental needs and unique background. First, studies show that having secure, close relationships with teachers are associated with children feeling more secure at school and making more positive connections with their peers (Pianta & Hamre, 2003). Studies show that close teacher-child relationships also foster heightened language growth in preschool settings, possibly because teachers and children who are close talk often, which is an important mechanism that supports children’s early language growth (Schmitt, Pentimonti, & Justice, 2012).



Second, there is evidence that children learn best when instruction is specifically targeted to their individual needs and strengths. For instance, one study showed that children who are Spanish/English bilingual learners have better outcomes when instruction occurs in both Spanish and English, rather than in English only (Barnett, Yarosz, Thomas, Jung & Blanco, 2007). Teachers can also be sensitive to children’s individual backgrounds by using children’s interests and information about their lives to inform interactions. When adults relate what happens in a storybook or a video to a child’s own life, comprehension and learning are improved (Hassinger-Das et al., 2017; Strouse & Ganea, 2014). Whenever teachers can use what they know about children’s backgrounds, skills, and interests to subtly individualize interactions with them and the instruction that they receive, children are likely to benefit.



IN A SPROUT CLASSROOM, YOU WILL SEE THAT:

- ☑ **Low staff turnover** allows children the opportunity to develop secure relationships with teachers.
- ☑ **Children view teachers as a source of comfort and security** and actively seek their attention, input, and support, while also feeling comfortable to act independently.
- ☑ **Teachers treat children as individuals** and know their strengths, needs, and backgrounds well enough to use that information to inform instruction.

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PLAYFUL LEARNING

Playful learning fosters a child-centered approach where teachers support learning in ways that are developmentally appropriate. In play, children are mentally active and engaged, giving rise to optimal circumstances for learning. Play can involve interacting with peers, which provides a context for practicing important skills such as negotiation, decision-making, and rule following. Play can be used intentionally by teachers to reinforce new skills in ways that further the love of learning.

OVERVIEW

Quality early education settings provide children with regular opportunities to engage in playful learning, a pedagogical approach that emphasizes child-centered and developmentally appropriate instruction. Playful learning includes both free play, in which children engage in self-directed activities that are fun and voluntary and do not have particular extrinsic goals, as well as guided play in which adults scaffold children's learning by using a play context to guide children to be active learners in pursuit of a long-term curricular goal. Playful learning stands in contrast to direct instruction, in which children are passive recipients of information and the adult has all of the agency in what happens and when. By definition, playful learning is fun and enjoyable for children, but it can also incorporate intentional learning objectives and allow for playful exploration of topics in a preschool curriculum that might otherwise be taught through direct instruction.

THE EVIDENCE

Research findings show that playful learning and guided play can be a valuable approach in early childhood education for enhancing many developmental outcomes (Weisberg, Hirsh-Pasek & Golinkoff, 2013; Yu et al., 2018; Zosh et al., 2018). For instance, playful learning approaches can enhance important school readiness skills like vocabulary (Hassinger-Das, Ridge, Parker, Golinkoff, & Dickinson, 2016; Toub et al., 2018) and early math (Ramani & Segler, 2008; Scalise, Daubert & Ramani, 2018). In one study, preschoolers learned more about properties of geometric shapes from guided play than from either free play or direct instruction (Fisher, Hirsh-Pasek, Newcombe & Golinkoff, 2013). Guided play, featuring literacy-rich props, such as writing utensils,



magazines, and menus in a restaurant setting, can be highly effective for improving children’s early literacy skills (see Justice & Pullen, 2003, for review).

The scaffolding techniques used by adults in playful learning and guided play appear to heighten children’s engagement and encourage them to be active in their own learning. For instance, when adults play side-by-side with children in dramatic play settings featuring literacy-rich props, children’s learning of early literacy skills is enhanced over play involving only children (Justice & Pullen, 2003).

IN A SPROUT CLASSROOM, YOU WILL SEE THAT:



- ☑ **Teachers make deliberate efforts to organize guided play activities** so that play is used to teach important early readiness skills, such as math, literacy, and social-emotional competence.
- ☑ **Teachers participate in free play and guided play** as an opportunity to engage children in learning opportunities through play.
- ☑ **Periods of free play** are offered where children are provided materials and props to pursue their own interests within a safe environment, such as riding trikes or digging in dirt.

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RESPONSIVE RELATIONSHIPS

Responsive relationships between teachers and children are key to supporting a child’s social, emotional, and cognitive development. Responsivity is a “dance” between the child and adult where the child signals his or her needs and the adult responds in a positive, consistent, and gentle manner. This can be most easily accomplished when the child-to-professional ratio is smaller rather than larger.

OVERVIEW

Quality early education settings show clear evidence of responsive interactions which are characterized by high levels of synchrony between teachers and children in their emotionality, sharing of information, and topic of discussion. Teachers are often seen following the children’s lead by reading their cues and responding in ways to ensure that children feel valued. Responsive interactions often feature regular “serve-and-return” interactions in which a child “serves” by engaging verbally or non-verbally, perhaps through a gesture or an action, and the teacher “returns the serve” by responding to the child in a way that reflects meaningfully on the child’s input. Additionally, the teacher should respond to a child’s needs with respect, kindness, and warmth and be mindful of the child’s individual interests.

THE EVIDENCE

Research findings show that responsive interactions support children’s learning and development (e.g., Early et al., 2007; Justice, Mashburn, Hamre, & Pianta, 2008; LoCasale-Crouch et al., 2007; Mashburn et al., 2008). For instance, one study found that preschool students who had high levels of responsive and emotionally supportive interactions with their teacher had higher levels of social competence and lower problem behaviors the next year of schooling (Curby et al., 2009). There is also considerable evidence showing that caregiving that is sensitive to children’s focus of interest (i.e., ‘follows the child’s lead’) is related to heightened growth in cognitive, language, and social development among young children (e.g., Landry, Smith, Miller-Loncar, & Swank, 1997). Experimental research shows that teachers in preschool settings who expand upon what children are talking about (rather than, say, ignoring the child or changing the subject) accelerate children’s vocabulary development during the academic year (Cabell, Justice, McGinty, DeCoster, & Forston,



2015). An expansion is a way to talk with children in which the adult builds upon what the child is saying by adding a bit more information, as in the following:

Child: “That’s all wet.”

Teacher: “That is very, very wet; it’s slippery.”

This type of talk is important, as it shows a sensitivity to the child’s current developmental level while expanding slightly upon it to foster learning and growth (Girolametto & Weitzman, 2002).

Studies also show that when adults use responsive conversations with children, including asking open-ended questions and expanding on what the child said, children’s language development benefits (e.g., Baker & Nelson, 1984; Wasik, Bond, & Hindman, 2006).



IN A SPROUT CLASSROOM, YOU WILL SEE THAT:

- ☑ **Teachers frequently have extended meaningful conversations with individual children** as a way to allow children to express themselves and improve their language skills.
- ☑ **Teachers follow the child’s lead** and respond appropriately.
- ☑ **Children appear to feel comfortable speaking with and seeking assistance from teachers** because they know that their bids for attention will be met with respect and care.

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ORGANIZED ENVIRONMENTS

Organized environments are characterized by predictability and routines. An organized environment allows children to anticipate the future, eliminates feelings of instability, and makes transitions from one activity to the next more bearable. The world can be very overwhelming to a child with lots of changing variables. Organized, stable environments allow children to relax in the comfort of knowing what comes next.

OVERVIEW

Quality early education settings are productive and organized places for children to learn and thrive, as seen in several key ways. First, the spaces in which children are cared for are inviting and warm, have many rich niches for specialized purposes (e.g., a writing center, a classroom library, a science center) and have furniture and furnishings that are age appropriate, such as small chairs and a small table in the writing center. Second, a particularly important characteristic of organized environments concerns the behavior management of children; in organized settings, teachers use a proactive, rather than reactive, approach for managing children's behavior. Proactive behavior management involves: ensuring that rules and expectations are clearly, consistently, and positively conveyed; active monitoring of children's interactions and behaviors to intervene early before issues compound, including re-direction; and helping children to learn to negotiate conflicts and misunderstandings with peers. Indeed, in a well-organized early education setting, relatively few behavior concerns are seen among children as there is a clear structure in place concerning how children are to behave and socialize. Third, organized environments are productive settings in which teachers carefully plan a daily schedule which maximizes time for learning and development. Organized environments provide children comfort through routines, which represent a set way for the day to run, but organized environments also provide novelty, such as rotations of themes, special visitors, and introduction of new toys or props.

THE EVIDENCE

Research demonstrates that preschool-aged children who attend more organized classrooms, as characterized by well-established routines and predictability, are more comfortable, focused, and eager to learn (Burchinal, Vernon-Feagans, Vitiello, Greenberg, & The Family Life Project



Key Investigators, 2014; Moiduddin, Aikens, Tarullo, West, & Xue, 2012; Rimm-Kaufman, Curby, Grimm, Nathanson, & Brock, 2009; Sabol, Bohlmann, & Downer, 2018). Moreover, when teachers provide clear expectations about how children should spend their time in the classroom, along with novel and interesting activities and materials, children demonstrate accelerated growth in their development of language, literacy, and math skills (Carr, Mokrova, Vernon-Feagans, & Burchinal, 2019; Downer et. al., 2012; Hatfield, Burchinal, Pianta, & Sideris, 2016). Carefully planned and executed daily learning schedules can prevent children from being unoccupied and disengaged; some research finds that children spend anywhere from 20 to 40% of the school day with no exposure to any learning activity (Early et al., 2010; Pianta, Whittaker, Vitiello, Ansari, & Ruzek, 2018), which can detract from their early learning experiences.

IN A SPROUT CLASSROOM, YOU WILL SEE THAT:



- ☑ **There are clearly identifiable and purpose-driven areas of the children’s learning space** that each include a variety of learning activities and materials that are regularly rotated to keep children engaged and interested.
- ☑ **Adults practice proactive behavior management** such that expectations are clear and consistent, and they monitor children’s interactions and behaviors to prevent, rather than react to, problems and conflict.
- ☑ **There are well-developed plans for the day** with clear thought for the day’s lessons and activities that correspond to clear learning objectives across multiple developmental domains, including language, literacy, math, and social-emotional competence.



USING EVIDENCE-BASED AND ENGAGING CURRICULUM

Using evidence-based and engaging curriculum is essential for helping children develop the basic skills necessary to tackle the learning demands ahead. If early childhood education is geared, in part, to enhancing children’s readiness for kindergarten, the curriculum must be aligned to the skills necessary at kindergarten entry and include academic, behavioral, and socio-emotional skills, all of which contribute uniquely and collectively to school readiness. The most effective curriculum is focused on specific rather than global domains.

OVERVIEW

Quality early education settings have a scope and sequence of instructional goals, addressed over the program year, that support intentional teaching of key developmental domains. The developmental domains of particular importance include language, literacy, early math, and social-emotional competence, although others – including the arts, science, and motor skills – can also be incorporated. A curriculum, put simply, provides teachers an instructional guide to follow so that children’s development across key domains is addressed fully and appropriately. Some curricula provide a scope and sequence of instructional goals alongside daily and weekly lesson plans, whereas others provide more ‘bells and whistles,’ such as extensive compendia of materials, assessment tools, and teacher training packages.

THE EVIDENCE

Curricula to be utilized should be carefully selected to ensure that they have demonstrated impacts on children’s outcomes in one or more targeted domains, and it is unfortunate that many early childhood programs use curricula that do not (Jenkins & Duncan, 2017), largely due to heavy marketing by publishers. The educational curricula market is a billion-dollar industry, and many early childhood curricula are marketed as ‘research-based’ when they, in fact, are not. However, many curricula have been rigorously tested for effects, and such curricula were often developed by researchers to support children’s learning in a specific domain. These are available to support



math (e.g., Clements & Sarama, 2008), language and literacy (e.g., Justice, McGinty, Piasta, Kaderavek, & Fan, 2010), and social-emotional development and self-regulation (Bierman et al., 2008). These curricula can be ‘stacked’ to develop a comprehensive curriculum that supports multiple domains of development, such as the Evidence-Based Program for Integrated Curricula [EPIC] developed by Fantuzzo and colleagues at the University of Pennsylvania (Fantuzzo, Gadsden, & McDermott, 2011). An important aspect of many early childhood curricula is use of a data system to track children’s progress on targeted developmental objectives. Teachers can regularly conduct brief observations of or tasks with children to document their progress and adjust instruction accordingly (Assel, Landry, Swank, & Gunnewig, 2007).

Importantly, many studies of curricula have found that teachers’ fidelity to a curriculum’s main components is very important; consequently, teachers must be fully trained in a given curriculum and receive ongoing supports to implement it as intended. Some studies find that having teachers work with coaches who can help them understand how to implement the curriculum is one way to make the curriculum more effective in the classroom (Yoshikawa et al, 2013).

IN A SPROUT CLASSROOM, YOU WILL SEE THAT:



- ☑ **Programs use a curriculum with a scope and sequence** that has been rigorously tested for positive effects on children’s development in key domains.
- ☑ **Data is collected** to document children’s progress towards curricular objectives and to guide teachers’ individualization of instruction as needed.
- ☑ **Efforts are made to implement curricula faithfully** with concrete record-keeping of progress through the curriculum and attention to the scope and sequence of instructional objectives.



TRAINING AND PROFESSIONAL DEVELOPMENT

Training and professional development are essential in both communicating to teachers that they are valued and respected as well as ensuring they have the knowledge and know-how to create the most optimal environments, experiences, and relationships in their classrooms. Teachers benefit from training in areas such as effective use of curricula, using assessment data to tailor instruction, and providing serve-and-return interactions.

OVERVIEW

Fundamentally, quality early education environments rely on the workforce who staff these settings, namely children's teachers. Indeed, teachers are at the core of every SPROUT indicator, as these are the individuals who provide safe and sensitive environments to children, ensure opportunities for playful learning, have responsive relationships with children, create and maintain organized environments, and effectively implement evidence-based and engaging curricula. Quality early education settings support and invest in their teachers by ensuring that they have ongoing opportunities to engage in training and professional development activities that help them to refine their skills, knowledge, and competencies.

Teachers' skills and competencies can be supported through formal training, education, and credentialing, as well as in-service development or on-the-job training. Quality early care settings must not only attract well-trained teachers, but retain them and continue to provide development opportunities that enable them to cultivate learning environments in which children will thrive. Teachers need to exhibit skills, competencies, and background knowledge that include numerous dimensions, including a deep understanding of child development, skills in intentionally teaching numerous content areas to young children, effective use of curricula and assessment data, ability to plan lessons and differentiate instruction to match the needs of individual children, and the ability to engage families. Importantly, given the increasing diversity of children participating in early education settings, quality teachers must be culturally competent and be able to use culturally competent teaching strategies. Finally, given the large numbers of children reared in homes experiencing significant stressors, including the adversities associated with poverty, quality teachers must also be able to use a trauma-informed lens to support the development and well-being of children experiencing trauma.

THE EVIDENCE

Many teachers working in early education settings do not have a 4-year college degree, nor do they necessarily have post-secondary training specific to early childhood education. However, the available evidence does not show that such credentials are associated with program quality. Specifically, a study of 237 preschool programs randomly selected from six states found that teachers' years of education, certification, highest earned degree, and college major had no bearing on quality evaluations of programs (based on observational measures), nor did these appear to influence children's learning over the academic year based on measures of language, literacy, and basic concepts with one exception: children made greater gains in math development if their teachers had a Bachelor's degree versus an Associate's or no degree (Early et al., 2007). On the contrary, there is extensive evidence showing that provision of specialized training and professional development to teachers working in early education settings can substantially improve the quality of these settings and positively impact children's growth. An important characteristic of these specialized training opportunities is that they are highly focused on supporting teachers to engage in evidence-based practices, rather than content or strategies of a general nature.

For instance, one recent study showed significant, positive effects on teachers' interactions with children following participation in a 5-day intensive workshop focused on improving the quantity and quality of teacher-child interactions. Observations of classroom characteristics showed that teachers' emotional support and intentional teaching significantly increased following the trainings, as did their classroom organization (Early, Maxwell, Ponder, & Pan, 2017). Similar studies show that intensive workshops are effective for training early education teachers how to use various language-facilitating strategies, such as expansions (Girolametto & Weitzman, 2002), use new approaches to reading books to children (Piasta et al., 2010), and employ proactive behavior-management strategies (Anderson, Weimer, & Fuhs, 2020), among others. Quality early education programs should help teachers to identify and participate in such trainings and, as importantly, ensure that teachers are provided time out of the classroom to do so.



IN A SPROUT CLASSROOM, YOU WILL SEE THAT:

- ☑ **The program has highly skilled teachers** who have the requisite technical knowledge, social-emotional skills, and cultural competence to serve the population of children (and families) in their care.
- ☑ **The program offers ongoing training supports** where opportunities and support are available to teachers to constantly improve skills in ways that improve pedagogy and the overall learning environment.
- ☑ **Teachers are clearly valued** as evidenced by a sustainable model for investment in their training, to curb turnover, and to ensure consistent quality in their teaching practices.

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