

Standard IV

Knowing Subject Matter for Teaching Young Children

Accomplished early childhood teachers integrate the foundational ideas of the subjects they teach, the ways young children think about these ideas, and effective approaches to support each child's learning.

Accomplished early childhood generalists bring together their knowledge of children, content, and pedagogy in ways that often appear effortless. In actuality, achieving this mastery requires deep knowledge of the foundational ideas in subject matter, sensitivity to the ways that young children reason about content, and awareness of the difficulties children typically encounter. Accomplished teachers understand that fostering young children's development in social, cognitive, linguistic, physical, emotional, and moral-ethical domains is crucial during the early childhood years. Teachers intentionally integrate these developmental domains into the teaching and learning of subject matter for young children. Accomplished teachers of young children know what is important in each content area, why it is important, and how it links with earlier and later understanding, both within and across subject areas.

Accomplished early childhood teachers design and implement experiences that effectively convey developmentally appropriate content and develop young children's critical thinking and creativity, and they also nurture the dispositions toward learning that children will need for success in the future. By making subject matter relevant, meaningful, and captivating, accomplished teachers invite children into the world of ideas and information.

Knowing Subject Matter

Accomplished early childhood teachers prepare young children to use subject matter in future levels of formal education and in life beyond school. They support children's enthusiasm, wonder, and curiosity about the subject areas. Teachers have a strong grasp of the subject areas they teach, including the main academic areas (language and literacy, mathematics, science, and social studies), the arts (visual arts, music, and drama), health education, physical education, and technology. They have deep insight into the knowledge, skills, and practices that distinguish each subject. They know how information is structured within each subject and understand the pedagogical methods through which subject matter knowledge can best be conveyed to young children. Accomplished teachers know the unifying concepts

that connect essential facts, ideas, and processes within each subject. They stay abreast of developments in the subject areas and appropriately incorporate new information in the classroom. They immerse themselves in learning and teaching all subjects with equal dedication. They realize that nurturing productive dispositions toward every subject is an essential professional task in the education of young children. As a result, accomplished teachers demonstrate purpose, create relevance, and model enthusiasm for each subject area, and they advocate the importance of every subject area.

Even though the degree to which disciplinary distinctions are apparent varies according to the developmental level of the children being taught, teachers ensure that all young children have opportunities to learn each subject. Teachers create ambitious but reasonable expectations for learning based on their general knowledge of child development and their ever-growing knowledge of the particular children they are teaching. They are knowledgeable about local early childhood learning standards as well as national and state content standards and use them as guides in their teaching and interactions with children and families.

Accomplished early childhood teachers know research-based instructional strategies specific to the disciplines. They judiciously select and capably employ the strategies that best suit their instructional goals and the development levels of the young children they are teaching. They sequence learning experiences in ways that make sense conceptually and that help children move steadily toward greater proficiency. Accomplished teachers find ways to integrate content areas seamlessly; however, they also know when to teach subject matter in isolation in order to enhance the learning experiences of children. Teachers continuously research instructional resources and skillfully choose and adapt those which will best support children's learning.

Integrating Subject Matter

Accomplished early childhood teachers know that subject-matter integration allows children to learn in the interactive, holistic ways that are most natural to them. Teachers draw on their understanding of the specific young children in their classroom as well as core subject matter when planning, implementing, and assessing integrative experiences. Teachers thoughtfully weave various aspects of the curriculum into meaningful associations in order to engage children's interests, embody appropriately high expectations, foster higher-level thinking, and encourage real-world applications.

Accomplished early childhood teachers are advocates for subject matter integration that is meaningful and authentic to children. They exercise professional judgment about the value and relevance of topics for integrated study, including those suggested by children. When designing integrated content experiences, teachers align goals, objectives, and child outcomes with state standards and local program expectations. Teachers use ongoing assessment of learners to refine cross-disciplinary activities, and they explain to children, parents, and others how integrated

learning is structured. Over the course of the instructional year, accomplished teachers achieve balance in teaching all subject matter, using an appropriate blend of events that focus on one subject area and those that are integrated. At the end of an integrated experience or project, teachers assess children's progress in relation both to specific subject area knowledge and cognitive skills that bridge disciplines.

Accomplished early childhood teachers employ a variety of ways to integrate content. They create opportunities for young children to investigate, research, write, create, express their knowledge artistically, and share their learning with an audience. They offer possibilities for thinking about content in new ways. They might engage children in projects, themes, invented games, community-service projects, concept maps or webs, or whole-group exploration of broad questions. Integrated approaches might include actual and virtual guests and trips, creative writing activities and dramatics, contests, construction of replicas, visual documentation of child and family events, or child interviews of family and community members.

The following sections describe how accomplished early childhood teachers understand the main content strands and practices in each subject, know and attend to the unifying concepts in each subject, apply their insights into the ways that young children typically understand each subject, and use their knowledge of the pedagogy and resources for each subject to provide meaningful learning experiences for children.

Language and Literacy

Accomplished early childhood teachers are conversant in the major theories, knowledge bases, and controversies related to the teaching of language and literacy. They create programs that promote the interrelated skills of listening, speaking, reading, writing, viewing, and visually representing. They also have a broad understanding of the continuum in language development and reading development and of the ways the stages of learning shape a model for teaching language and literacy. Teachers promote daily print and oral experiences. They use visual representations such as graphic organizers, graphs, charts, illustrations, photographs, and available technologies to foster critical and creative thinking through the use of language. They draw on their knowledge of the key challenges and typical and atypical processes in the development of literacy skills and capacities.

Accomplished early childhood teachers know how young children acquire a first language and how they acquire a second one, and they address the challenges that English language learners face. Teachers differentiate instruction so that all children can achieve their fullest potential. Teachers design appropriate learning experiences in ways that will challenge and motivate children at a suitable pace. They explain to parents, administrators, and colleagues how their instructional strategies and objectives support children's language development.

Accomplished early childhood teachers recognize the importance of social interaction in developing strong language and literacy skills, and they facilitate

such interaction among young children. Teachers support dramatic play, such as spontaneous pretend play, dramatizing their own and other people's stories, and reenacting literature, as an important way to help children develop literacy skills. Teachers might have children create group morning message charts as well as individual and group stories, and then share them aloud in order to understand better the connection between what is said and what is written. They might also use class poems and songs as a further means to reinforce these connections. Accomplished early childhood teachers might use interactive writing to begin to teach the conventions of written language.

Listening and Speaking

Accomplished early childhood teachers understand that literacy is developed by building on every young child's oral language skills, including the development of listening comprehension skills, a rich oral vocabulary, the ability to understand and express complex thoughts through spoken language, and the ability to reflect on language. Although these skills develop naturally, teachers use explicit instruction and rich language experiences based on children's individual needs to expand children's use and appreciation of oral language. Teachers foster and model listening and speaking. They also explicitly teach speaking and listening skills without hindering children's natural expressive abilities, diminishing the importance of their families' primary language, or dampening their desire to continue learning. (See [Standard V—Assessing Children's Development and Learning](#).)

Accomplished early childhood teachers know that listening is more than just the physical act of hearing; it is the process of receiving and attending to meaningful auditory stimuli, processing sounds, and comprehending auditory messages. Teachers know that attending to the speaker is fundamental to listening. Therefore, teachers model for young children how to stop what they are doing when someone begins to speak, look directly at the speaker, listen for main ideas, and ask questions for clarification. Teachers encourage children to pay attention to such non-verbal cues as body language and facial expressions in order to understand better and relate to others. Accomplished teachers explain that various cultures have differing conventions for nonverbal communication, and they help children interpret these differences when they arise.

Accomplished early childhood teachers are knowledgeable about distinct purposes for listening, such as informational, critical, appreciative, relational, and discriminative. They provide experiences that allow young children to listen for all these purposes, and they help children develop listening strategies to match each purpose. For example, interactive listening activities such as call and response foster question-and-answer interactions.

Accomplished early childhood teachers are well versed in the literature that examines the connection between oral language development and the acquisition of reading and writing skills, both for native English speakers and for those learning English as a new language. Teachers use this knowledge base to design appropriate

learning experiences for children of different ages and with different levels of language and literacy in their first language and in English.

Accomplished teachers provide children with opportunities to participate in rich and varied experiences with spoken language. They engage children in meaningful conversations. They retell what they have seen and restate what they have heard, and they encourage children to do the same. They provide activities and materials that promote children's conversations with peers and adults, both one-on-one and in groups. They encourage children to discuss stories, the things they are learning in school, and their own experiences. Teachers invite children to play with words and sounds through such vehicles as rhymes, chants, and songs, and they foster children's awareness of the rhythmic patterns in language. Accomplished teachers are constantly working to expand and enrich children's vocabulary. They support children's presentation of information in clear and well structured ways, model for children how to adjust their speech and language depending on their audience and purpose, and provide an environment in which children feel safe communicating their thoughts.

Accomplished early childhood teachers show respect for diverse language traditions. They demonstrate the importance of oral traditions to various cultures by teaching fables, fairy tales, folktales, folk songs, and legends in age-appropriate ways. Teachers extend opportunities to people of many cultures to share their rich oral histories with the class. For example, an accomplished teacher might invite family and community members to sing a traditional song or chant from their native culture. Accomplished teachers provide the necessary support for children whose first language is not English, and they understand the issues that arise when standard English is not the language a child speaks on a regular basis. Accomplished teachers make the effort to understand how literacy is understood and used in the child's home culture and family, and they apply their findings in ways that increase children's prospects for success.

Accomplished early childhood teachers accept and value young children's unique modes of expression and distinctive dialects as they guide them toward conventional speaking. Teachers recognize that mastering the conventions of formal language is one key to children's future success. Accomplished teachers model standard English in the classroom and find appropriate ways to incorporate enriched language in their speech. When children's utterances are fragmentary or vague, accomplished teachers recast those utterances as complete sentences containing precise and vivid language, and they do so in a way that is natural and respectful, helping children see how to use oral language in a more sophisticated way. Teachers also use their knowledge of oral language development to identify children who may benefit from assessment by a specialist. In the case of children who need speech and language interventions, accomplished teachers collaborate with specialists and families and provide related support in the classroom.

Reading

Accomplished early childhood teachers recognize that in order for children to become proficient readers, teachers must provide a comprehensive, balanced approach to instruction which includes explicit, systematic reading skills development. Teachers of younger children incorporate the components of teaching early literacy (print awareness, phonological awareness, alphabet knowledge, vocabulary, and comprehension) and teachers of older children incorporate the components of teaching reading (phonemic awareness, phonics, vocabulary, comprehension and fluency) every day.

Accomplished early childhood teachers know the broad range of print-awareness skills and provide children with opportunities to acquire these skills. When reading to preschool and kindergarten children, teachers focus children's attention on such features as book concepts, print directionality, and differentiating pictures from print. Because they understand the challenges young children face when attempting to map spoken language onto print, teachers often point to the text as they read in order to help children track the text. Teachers of primary-aged children help learners begin to understand how authors use headings, graphs, and pictures to aid readers in constructing meaning from the text.

Accomplished early childhood teachers know that explicit instruction in phonological awareness is important to children's development as readers and that children's knowledge progresses from the whole (words in sentences) to the smallest parts (sounds in words). While teachers provide children with opportunities to acquire the full range of phonological awareness skills, including separating sentences into words, clapping syllables in words, and blending, segmenting, and substituting phonemes in words, accomplished teachers of preschool and kindergarten children emphasize learning opportunities focused on early phonological awareness skills. Teachers of primary-aged children emphasize the phonemic awareness that will help children decode unknown words.

Accomplished early childhood teachers know that alphabet knowledge includes identifying and naming letters and producing letter-sound associations, and they know the role that alphabet knowledge plays in children's ability to decode and spell words. Teachers provide young children with both playful learning opportunities and explicit teaching strategies to help them learn letter names, often beginning with the letters in the child's name. Teachers know that although children learn some letter-sound associations when they learn some letter names, primary-aged children also need explicit phonics instruction. Teachers provide phonics instruction and help children learn how to apply this knowledge to decode written words. Early childhood teachers are aware of issues that affect the alphabet awareness of English language learners. They know that not all children's home languages have a written form, that not all languages are written alphabetically, and that some children will not have experienced all the sounds of English in their home languages. Accomplished teachers are sensitive to the ways in which children's diverse language backgrounds affect their ability to learn sound-letter associations in English and provide extra support when necessary.

Accomplished early childhood teachers know that the size of a child's vocabulary is a strong predictor of reading comprehension. Therefore, early childhood teachers use a variety of research-based instructional strategies, such as repeatedly reading books with rich vocabularies, providing child-friendly definitions of words while reading to children, and creating word walls to increase children's expressive and receptive vocabularies. Teachers also recognize the importance of providing explicit vocabulary instruction.

Accomplished early childhood teachers recognize that the primary goal of reading is comprehension. They help young children master reading comprehension skills, such as identifying main ideas and key details, identifying cause-and-effect relationships, understanding the sequence of events, comparing and contrasting ideas and details within and across texts, and analyzing literary elements such as plot and theme. Teachers understand that children need to apply a wide range of strategies, such as predicting, generating questions, rereading, creating graphic organizers, discussing, and summarizing to comprehend, interpret, evaluate, compare, and appreciate texts. Teachers encourage children to ask and answer questions before, during, and after reading. Teachers model for children how to make connections that link text to self, text to text, and text to the world. Accomplished teachers of preschool and kindergarten children begin young learners' acquisition of these comprehension skills and strategies through regular read alouds. As children transition to reading texts themselves, they learn to apply these skills and strategies in their independent reading.

Accomplished early childhood teachers know that fluency involves more than the ability to read with speed, accuracy, and proper expression; fluency also contributes to comprehension. Teachers read aloud regularly in class to model fluency, and they have young children read to each other, sometimes rereading texts. Teachers have children read aloud a variety of texts, such as stories and poems, and in a variety of formats, such as reader's theatre. Teachers understand the importance of teaching children to vary their reading rate depending upon the type of text and the purpose for reading.

Accomplished early childhood teachers create a print-rich environment. They make ample use of functional print in the environment, such as posters explaining how to use equipment. They also use environmental print, such as arrows showing how to turn lights off and on, because they know that young children engage in reading environmental print, such as road signs, restaurant logos, or pictures on packages, before they read print in books. Teachers use environmental print to foster young children's understanding of concepts about letters, words, and messages. They provide children with a wealth of appealing reading materials in a range of formats, including print and digital, and at varying levels of complexity. They expose children to texts that represent diverse topics, genres, cultures, and time periods, and they expose children to reading for both information and enjoyment. They use literacy stations or learning centers to provide children with opportunities to reinforce reading skills and strategies, and they share their own love of reading, model good reading habits, and instill the love of reading in children.

In all educational settings, including those in which children's home language is not English, accomplished early childhood teachers build on the previous linguistic experiences of children. They organize their classrooms in ways that take advantage of children's prior literacy experiences. They promote and encourage the ongoing development of language and literacy in spoken language in the home and community.

Writing

Accomplished early childhood teachers know how young children develop as writers, and they use this knowledge to teach writing. They know that young children's writing tends to progress from scribbles, to mock letters and symbols, to developmental spelling with limited control of mechanics, and then to increasing use of conventional spellings of words. They know that for the youngest children, "writing" to express their ideas may involve drawing and dictating as well as actually forming letters and words. Teachers encourage children to communicate using print, and teachers gain insights into children's thought processes and growing literacy by studying what they write. They understand the challenges that children face when trying to convey their thoughts in writing.

Accomplished early childhood teachers understand the importance of teaching writing in ways that are meaningful and developmentally appropriate. Teachers encourage children to write, or pretend to write, during dramatic play; for example, children might act the parts of servers writing restaurant orders, or they might create road signs for block cities they have built. Accomplished teachers create readily accessible writing areas stocked with materials such as pencils, markers, staplers, and paper that children can use to write and illustrate books and cards.

Accomplished early childhood teachers support children's development as writers in many ways. They introduce children to the different genres, including narrative, informative, and persuasive texts, and they provide opportunities for children to write for a variety of purposes and audiences. They encourage children to share their opinions, provide information, recount experiences, or correctly explain the steps in a procedure. They understand how to scaffold children's writing development. For example, they might guide children through the stages of creating an argument, moving them from simply stating an opinion to ultimately creating a counter-argument.

Accomplished early childhood teachers provide developmentally appropriate instruction in the writing process. They teach young children prewriting strategies such as brainstorming; finding a topic that fits a purpose or an audience; researching or otherwise exploring ideas related to the topic; and organizing ideas with outlines, webs, charts, or other graphic organizers. They show children how to write a first draft, reminding them to include details that will catch the reader's interest and to provide support for main ideas. They teach children to revise their work by reviewing ideas and organization, and model how to edit work for spelling, capitalization, punctuation, and grammar. Finally, they help children publish their work. Accomplished teachers weave technology into every step of the writing process, from researching interesting topics, to checking spelling, to publishing.

Accomplished early childhood teachers demonstrate that good writers are also good researchers. They teach young children how to formulate questions, find answers in a variety of sources, evaluate sources, and restate information in their own words. They explain the meaning of plagiarism and show children how to cite sources appropriately.

Viewing and Visually Representing

Accomplished early childhood teachers understand that viewing refers to the act of attending to communication conveyed by visual representations, and that visually representing refers to conveying information or expressing feelings using non-verbal media such as drawings, photographs, graphic designs, or physical performances. Teachers know that viewing and visually representing involve visual language, and they teach children to become attuned to the conventions, style, and vocabulary that visual language comprises. Teachers understand how visual images become part of spoken and written language, thus making visual representations an integral part of language development. Accomplished teachers know that children process visual language differently; for example, children with visual impairments might view drawing, charts, and diagrams tactilely. Accomplished teachers use developmentally and culturally appropriate strategies to teach all children skills related to viewing and visually representing.

Mathematics

Accomplished early childhood generalists know the ways in which young children think about mathematics and know mathematics in ways that allow them to support the learning of every child. Teachers know the structures and interconnections of mathematical topics. They are skilled in modeling processes and practices that provide young children with the means of developing and using mathematical ideas, and they routinely structure opportunities for children to engage in practices such as representing and explaining their mathematical thinking. Accomplished teachers know, and are skilled in noticing, how children think about particular concepts, procedures, and practices. They are familiar with children's common misconceptions about mathematics, and they assist children in clarifying them as they arise. Teachers lay a solid foundation for future learning by nurturing the view that mathematics makes sense and is practical.

Accomplished early childhood teachers know the content of mathematical strands, including number and operations, geometry and spatial sense, measurement, data and probability, and algebra. They have particularly deep understanding of the early concepts, skills, sensibilities and procedures related to each strand, and they know the ways in which these elements connect. Teachers appreciate and emphasize number and number sense in early mathematics. With younger children, this work involves daily routines that involve the use of numbers and development of number sense through collecting objects, counting objects, and associating numbers with collections of objects; saying, reading, and writing numbers; playing simple games that involve numbers; grouping objects and skip counting by 2s, 5s, and 10s; and engaging concretely with number combinations and estimation. When working

with older children, the focus moves toward operations, basic facts and invented algorithms; increasing use of symbols; and engagement with larger numbers and numbers beyond whole numbers. Accomplished teachers know that using pictures, manipulatives, and strategies can help to develop children's fluency with basic facts. They also know how to support children's development of increasingly sophisticated ideas, such as moving from informal understandings of *more* and *less* to the more precise terminology of *greater than/less than* and finally to the use of symbols such as $<$ and $=$. Accomplished teachers might explain mathematical symbols through accessible and playful analogies; for example, they might explain that the $<$ symbol looks like the open mouth of a hungry crocodile that wants to eat the greater number.

Accomplished early childhood teachers are mindful that counting, numbers, and operations do not comprise the entirety of mathematics in the early grades. For instance, they understand that pivotal aspects of mathematics content such as algebraic reasoning are rooted in young children's opportunities to notice, record, and build patterns. Teachers provide time for young children to work through sequences of concept and skill development. They might have children progress from using non-standard measurement, such as the use of body parts and everyday objects to measure, to using standard units to measure properties of an object. Teachers know how national and local standards delineate mathematics content. They also know various ways in which mathematical topics are embedded in mathematics curriculum materials, are embedded in other subject areas, and are embodied in real-world experiences.

Accomplished early childhood teachers competently model processes, including problem solving and reasoning, the representation and communication of mathematical ideas, and the ways that connections are made among ideas. They believe that young children can engage meaningfully in these processes and routinely provide opportunities for them to do so. They know how to support young children as they learn content through the use of these practices and also support learning of key aspects of the processes themselves. They see the roots of mathematical processes in the ways that children organize information, record their ideas while participating in mathematical play and centers, or name an example to support a mathematical idea. Teachers provide tools and technologies that facilitate multiple methods of representation, connections, and communication. They encourage children to describe their approaches to problem-solving and their uses of representation.

Accomplished early childhood teachers know unifying mathematical ideas and understand how these concepts connect mathematical strands as well as connect essential subject matter facts, ideas, and processes. They know that young children are capable of engaging meaningfully with unifying concepts and ensure that the encounters are developmentally appropriate. Accomplished teachers ensure that children encounter ideas such as *precision* when measuring, using operations with numbers, and talking about particular shapes. Teachers encourage attention to *generalization* when helping children move from specific observations to broader insights. For example, when children working with stackable cubes see that $3+4$ yields the same result as $4+3$, an accomplished teacher helps them understand that

this pattern is not a unique occurrence but rather is representative of a mathematical property that applies to all addition problems. Teachers point out the different ways in which *notation* is used. For example, it might be used to label each vertex in a triangle with a different letter, or to use the letters *B*, *Y*, and *G* to document a pattern of blue, yellow, and green colored beads. Teachers encourage children to use notational norms that will serve them well in later learning. They systematically plan opportunities for children to encounter and name unifying concepts, but they also know how to harness teachable moments in ways that highlight the importance and usefulness of those ideas. They realize that overarching insights into mathematics are present even when working on specific concepts and skills, and they use unifying concepts to help children see participation in mathematics as coherent and cumulative.

Accomplished early childhood teachers know that mathematics learning begins with children's insights and language and then builds on these insights. Teachers encourage young children to talk about mathematical ideas, processes, and reasoning. They help young children describe attributes of shapes, identify shapes in their immediate environments, and reason that the orientation of a shape does not affect its attributes, so that for instance a door and table can both be rectangles even though one seems tall and skinny and the other appears to be short and wide. Teachers ask children to demonstrate and explain the logic by which they reached an answer. They help children make connections between informal everyday language, such as "take away," and formal mathematical language, such as "subtract." They also use tools such as models, diagrams, and story problems to expand children's initial understanding of concepts such as subtraction. Teachers help children learn that in mathematics, many names can be associated with the same thing. For example, 4 is a digit, a quantity, a numeral, and an even number. Teachers model the appropriate use of mathematical language and provide many opportunities for children to develop mathematical language through experiences such as describing shapes as a process to understand geometry concepts; estimating quantities, distances, weights, and lengths of familiar objects when considering measurement concepts; and making predictions while using data. Teachers also know that invention, inefficiency, and error are a part of the process of developing mathematical ideas. Teachers recognize that understanding concepts, fluency, skill in developing and using strategies, adjusting ideas to work in particular contexts, and perseverance are all hallmarks of mathematical competence. They value each of these attributes of competence, understand their interdependence, and use knowledge of children's thinking to plan and implement instruction.

Accomplished early childhood teachers provide varied opportunities for children to explore mathematics. Teachers design mathematical tasks that engage children in doing mathematics in authentic ways. They encourage children to generate their own questions and then develop, explain, and defend their responses. They create rich environments in which children select from among manipulatives, mathematical tools, and technology as means to solve problems. Accomplished teachers encourage children to exchange ideas and strategies and to try different approaches to problems. Teachers scaffold learning in such a way as to help children reflect and gradually arrive at key ideas over time. They partner with parents and obtain community resources to expand where, when, and how children use mathematics.

Using all these strategies, the accomplished teacher supports young children's learning and their sense that mathematics is worthwhile.

Science

Accomplished early childhood teachers appreciate the ways that young children think about science. Teachers understand key elements in science and select science content that strengthens the cognitive capacities of learners. Teachers know that young children's dispositions toward science form at an early age, and they build skillfully on children's curiosity and wonder to help them organize and report their meaningful discoveries. They provide consistent opportunities for children to examine, explore, compare, classify, describe, and ask questions about their environment. They support children's growth in the ability to formulate and follow up on questions, and as children progress, teachers help them explore their world more systematically. Teachers understand the nature of scientific inquiry and the ways in which the scientific community works to test theories and build knowledge over time. Accomplished teachers use inquiry approaches to provide opportunities for children to learn scientific skills, such as predicting, observing, gathering information, inferring, generalizing, and analyzing data, to acquire the skills needed for inquiry and to create their own hypotheses.

Accomplished early childhood teachers are familiar with the major concepts of earth science (space, physical features, geological formations, forces of nature, and environmental science), physical science (motion and energy), and life science (plants and animals). Teachers are adept at teaching the unifying concepts and themes of science, such as systems, energy, and change, and they realize the significance of process standards to support those ideas.

Accomplished early childhood teachers help young children see the relevance of science. For example, when teaching life science, teachers might engage younger children in understanding the body through activities involving their senses and through stories, songs, and motions. Teachers might involve older children in earth science with a study of animal habitats or an investigation of the features of the natural environment outside the school. In physical science, teachers might begin simple investigations of the properties of water by having children observe an ice cube and tell what occurs when it is exposed to heat. The children might further explore water's states of matter by heating the water to see it evaporate or freezing it so that it will turn into a solid cube. In environmental science, the accomplished teacher might have children plant a garden or develop and observe a compost pile to learn how to recycle waste into useful fertilizer that helps save our Earth. Accomplished teachers understand that such hands-on activities help children make connections to the world around them.

Accomplished early childhood teachers know that young children typically have roughly formed notions about science. Teachers value the thinking processes behind children's naïve conceptions and design developmentally appropriate learning experiences to help children uncover explanations that are closer to scientific reality.

For example, teachers might guide younger children to discover the reason an item sinks is not because it is too big or, with older children, because it is too heavy. Teachers understand the complexity of concepts in science, and they take care to address the scientific process to help children understand those concepts. Teachers know what level of scientific terminology is challenging yet attainable for children of a given age. Teachers design learning experiences that help children uncover for themselves the counterintuitive nature of many scientific principles. Accomplished teachers understand that deep discussions can transform a class of children into a community of future scientists.

Accomplished early childhood teachers know that children need to know scientific facts as well as to practice scientific inquiry, and they create a program that balances both elements. They help young children become aware of the scientific nature of their questions, pursue multiple paths to investigate a problem, and raise new questions. Teachers also allow children to take control of investigations and extend them if they wish. Rather than having children simply execute prefabricated experiments, accomplished teachers use probing questions to steer children toward discoveries.

Accomplished early childhood teachers understand ways of using inquiry to engage children in hands-on science that supports the learning of scientific concepts and processes. They know that engaging children in science is foundational for developing children's ability to ask questions, conduct investigations, collect data, and seek answers. Teachers provide sufficient time to instill in children a deep understanding of essential scientific concepts rather than simply providing children with a superficial acquaintance with isolated facts. They help children develop acute observational skills and support children's emergent reasoning and problem solving about what they experience through their senses. In addition, they incorporate ongoing exploration, investigation, and inquiry in science as a consistent part of their curriculum. Teachers systematically plan instructional activities, some of which focus solely on science and some of which integrate science with other subject areas. Teachers are also adept at using teachable moments to steer children toward new knowledge. Accomplished teachers constantly research new knowledge bases and use technology and best practices to enhance children's learning in science. Accomplished teachers ensure that all children have an equal opportunity to engage in science as a means to understand better and enjoy the natural world.

Social Studies

Accomplished early childhood teachers know that social studies is the vehicle through which young children acquire knowledge of the past and the present and prepare for the future. They know that for young children, understanding social studies begins with fundamental questions about who they are and where they live. While supporting individual development and identity, accomplished teachers move children into and out of a variety of social groups in school and the broader community as a way of developing the sense of social identity essential for understanding social studies. Teachers nurture children's abilities to work collectively and make informed

decisions for the common good. Teachers' ultimate goal is to help children become responsible, productive citizens of their local communities, their nation, and the world.

Accomplished teachers are knowledgeable about the fields of history, geography, civics, and economics. They understand the connections among these fields and effectively integrate the scope and sequence of social studies across the curriculum in developmentally appropriate ways. Teachers take advantage of children's natural curiosity about the world to introduce them to the ways in which social science promotes understanding of different cultures, people, and places. Teachers know the common misconceptions children have within the social studies. For example, children might think that George Washington and Abraham Lincoln were friends or that all Native Americans live in teepees. Teachers are adept at teaching skills and concepts in ways that ensure the social studies are not viewed simply as factual recall. Accomplished teachers plan for active and authentic learning experiences; whenever possible, they use field trips, reenactments, and play to make social studies come to life. Through the innovative use of literature, technology, artifacts, and data from places such as historical societies and museums, teachers provide children with valuable opportunities to gain a sense of human existence in the past and the present. Accomplished teachers also encourage children to make predictions about the future.

Accomplished early childhood teachers strive to use children's natural curiosity to help them understand the concept of history. Teachers know that children need to understand their place in time and begin to comprehend how their lives are rooted in historical events. They use children's ability to recount stories as routes to understanding the concept of chronology. Teachers of younger children might ask them to develop a timeline listing the events of a day, week, or even a whole school year in chronological order as a way of giving children insight into the concept of how people, objects, and experiences change over time. Teachers of older children might focus on the technological advances made throughout history, such as innovations in transportation or communication. Accomplished teachers might use examples of how people have mailed letters over time, from the pony express to e-mail, to illustrate some of the ways that science and technology changed the lives of children's ancestors and continue to affect society today. Teachers help children develop a historical perspective on how our world is continuously evolving, and yet remains the same in many ways.

Accomplished early childhood teachers use developmentally appropriate strategies to help young children develop geographic concepts, and they provide opportunities for children to consider spatial relationships as a precursor to understanding the concept of location. Teachers find concrete ways to explain how people all over the world are connected to one another, including through the global economy. Teachers might prompt children to examine the labels on items such as their backpacks or their clothes to identify where they were made, and then pinpoint the items' sources on a globe or a map. Teachers might take children on walks to learn about their neighborhood, using directional words such as "left" and "right" or "north" and "south" to describe the orientation of traffic signs, buildings, and people.

To make these experiences even more meaningful, teachers might help children subsequently construct a model or map of the neighborhood and discuss what they observed.

Accomplished early childhood teachers use the concepts of civics and government to help children understand that in their learning communities, just as in their homes, there are rules, rights, and responsibilities that allow the members of the group to interact successfully. Teachers might regularly schedule meetings in which children interpret the classroom codes of conduct and discuss how to resolve issues. Teachers might guide children through the process of creating their own set of behavioral expectations and appropriate consequences for the classroom.

Accomplished early childhood teachers know that young children may be aware of and concerned about problems in their neighborhood or issues they have heard about through various media. Teachers help younger children begin to understand the role that local agencies such as fire and police departments play in addressing such problems. Teachers of older children help them understand the levels and functions of government and envision their role as citizens. Addressing issues related to governance helps children learn to solve problems in a way that benefits both themselves and the community.

Accomplished early childhood teachers help young children explore the principles of economics in the context of familiar experiences. For example, teachers might organize play stores, restaurants, and other appropriate economic venues to illustrate principles related to resources and consumption. Teachers might prompt children to create a class town with its own monetary system designed by the children, or might set aside certain days on which children are allowed to set up a business to sell something such as a craft item. Accomplished teachers hold discussions on such concepts as trade, wants and needs, supply and demand, and consumers and producers in order to help children understand that economics is part of everyday life.

Visual Arts

Accomplished early childhood teachers sensitively interpret the ways young children use symbols and patterns of artistic expression to communicate their ideas and feelings. They promote children's awareness and creation of the visual arts in ways that are developmentally and culturally appropriate. Teachers have a broad background in the arts which allows them to make visual arts an integral part of the early childhood curriculum; they are familiar with the unifying concepts of the visual arts, which include color, texture, line, symmetry, light, and shape. They are also familiar with various visual media, including drawing, painting, sculpture, and film, and they know some of the history of art in cultures throughout the world.

Accomplished early childhood teachers understand that creativity is at the heart of children's artistic expression. They provide opportunities for each young child to experiment with various tools, processes, and media, and they mirror children's joy and excitement as children share their resulting artwork with others. Teachers use art

materials, media, and concrete props with children as catalysts for talking and thinking about compelling design questions. They support artistic investigation and provide opportunities for children to observe, reflect, explore, and create using the visual arts. Accomplished teachers understand the ways in which eye-hand coordination and body-brain development are enhanced when children explore the visual world, and they can explain the many benefits of the visual arts to colleagues and families.

Accomplished early childhood teachers help children look at art, talk about art, create art, and develop an awareness of the visual arts in their everyday lives. They create environments in which play, both natural and virtual, serves as a context for engaging in artistic activities. Teachers help children analyze and evaluate the visual arts. For example, accomplished teachers of younger children might have them peruse multiple books by a single illustrator to highlight the use of color or line, whereas teachers of older children might engage them in comparing styles among multiple illustrators.

Accomplished early childhood teachers help children understand that there are many valid aesthetic approaches and responses to the visual arts. Whereas some children may consider a particular work of art appealing, others may find it unsettling. Teachers use examples from a variety of cultures to expand children's understanding of different approaches to beauty and aesthetic expression. They also help children appreciate beauty in the world around them and begin to manipulate their own aesthetic environments. For example, children may be encouraged to select and display their work throughout the community. Accomplished teachers value each child's developing appreciation of the visual arts and incorporate children's artwork in the classroom.

Accomplished early childhood teachers use the visual arts to extend other aspects of children's learning. They seek opportunities to creatively integrate visual arts content and skills in children's daily activities and learning. For example, in mathematics, teachers may have children draw or paint patterns. In social studies, children might design a flag or represent an aspect of their culture through various artistic media.

Music and Drama

Accomplished early childhood teachers recognize that the performing arts enable forms of emotional expression that may not be available in other parts of children's lives. They strive to support meaningful and developmentally appropriate opportunities for children to engage in both drama and music. They design activities that reflect the diversity of the children in the educational setting and the local community, and they involve families in performing arts activities.

Music is one of the first ways children experience communication—through lullabies, rhymes, or simple humming. Accomplished early childhood teachers know that music brings people together through song, movement, communication, storytelling, and performance. They provide young children with multiple opportunities

to explore music through singing, dancing, and listening as well as through the use of instruments. Early childhood teachers use music to enhance learning and development across the curriculum, and as a medium to develop skills such as body coordination and awareness, language, reading, memory, spatial reasoning, number concepts, and timing. Accomplished teachers also use music as a mnemonic device when teaching concepts such as counting, colors, relationships among ideas, and social skills.

Accomplished early childhood teachers know that listening is a fundamental musical skill to develop in young children. Listening is a nonthreatening way for a child to participate in music because no performance is involved, and listening to music helps children learn patterns of sounds and rhythms. Teachers provide frequent opportunities for children to listen to and appreciate music so that they can expand their store of musical experiences and develop a vocabulary for talking about music. Teachers introduce various rhythms, melodies, and tones and help children to discriminate differences in pitch, beat, and volume. They select music that represents the vast range of human experiences and musical traditions. Accomplished teachers also use music to enhance the study of other cultures and languages and to help children appreciate various musical forms and styles.

Accomplished early childhood teachers are familiar with the basic elements of music: rhythm, tempo, pitch, tone quality, dynamics, and harmony. They understand that music is a uniquely human enterprise which represents cultural, patriotic, and religious values; as well as the sense of a particular time or place and widely shared emotions and experiences associated with music. Teachers strive to integrate elements of music into the curriculum and daily routines. Accomplished teachers know that by listening to music, singing, playing instruments, and moving to music, young children develop healthy ways to interact and express themselves.

Accomplished early childhood teachers provide time, space, and materials so that young children can explore sounds and rhythms. Teachers provide young children with opportunities to practice vocal and instrumental sounds through solos and ensembles. Most children spontaneously express whole body rhythm activities through creative play, and accomplished teachers use this expressiveness as a transition to drama and the performing arts. They encourage children to create and move to music as well as listen to it. They may provide opportunities for children to express themselves by singing and playing musical instruments. Teachers help children to improvise short songs and instrumental pieces using a variety of non-traditional sounds such as paper tearing or pencil tapping; body sounds such as hands clapping or fingers snapping; and electronic sounds such as keyboards or synthesizers.

Accomplished early childhood teachers understand that drama is a process through which individuals enact ideas, wishes, and conflicts, often in symbolic form. They are familiar with the basic elements of drama, including plot, theme, character, language, music or rhythm, and visual elements such as scenery, costumes, and props.

Accomplished early childhood teachers know that acting out stories is characteristic of young children, and they understand that drama is one of the primary ways in which children learn about life. By creating and reenacting situations, playing different roles, exploring different viewpoints, interacting with peers, arranging the environment, directing the course of the action, and solving problems, children can make sense of their world. Teachers understand that for young children, drama is primarily an improvisatory process that fosters the physical, social, and emotional exploration of unfamiliar or challenging concepts or experiences within a safe environment. Accomplished teachers enhance the learning potential of dramatic play by encouraging children to reflect on the options they explore and the decisions they make.

Accomplished early childhood teachers design and select dramatic activities using their knowledge of child development, individual children, and the community in which children live. They provide opportunities, ideas, and props that extend play, develop imagination, and encourage creativity. They provide children with opportunities to use the processes of drama to extend learning in the subject areas. They choose activities that foster teamwork, character building, empathy, self-confidence, speech and language development, imagination, problem solving, memory, aesthetic appreciation, and fun. They encourage children to explore diverse roles, viewpoints, and motivations; to listen carefully to and interact sensitively with peers; and to adapt the environment to their imagination. Accomplished teachers guide older children in their ability to identify and compare similar characters, settings, and situations in dramatizations.

Health Education

Accomplished early childhood teachers are committed to promoting young children's health and well-being, and they place children's well-being at the center of the health curriculum. Teachers know that wellness results from the integration of the physical, cognitive, linguistic, emotional, social, and moral-ethical domains, and that daily practice of the basic health skills of communication, decision making, goal setting, stress management, and conflict resolution helps young children to be healthy. Accomplished teachers understand that good health supports children's progress in all areas of development and learning.

Accomplished early childhood teachers plan positive routines for play, work, rest, hygiene, and social interaction throughout the day. They implement skill-based instruction in health during play, meal, rest, and transition times. Teachers educate young children about their need for movement and play and help them develop effective strategies for maintaining wellbeing. Accomplished teachers teach and model daily health habits in nutrition, safety, hygiene, physical activity, relationships, rest, and quiet time.

Accomplished teachers plan opportunities for young children to explore the unifying concepts of health, such as the influences of families, peers, media, culture, technology, prevention, and habits, to inform their health practices. Through

instruction augmented by cues to action and ongoing feedback, teachers provide young children with opportunities to practice daily routines for personal health. For example, teachers may cue children to set goals for how many fruits and vegetables to eat every day and set goals for brushing teeth twice a day. They also encourage children to verbalize their needs, wants, and feelings in healthy ways, and have children differentiate when to make health-related decisions individually or with trusted adults and community helpers.

Accomplished teachers use instructional strategies such as graphic organizers, checklists, and hypothetical situations to help young children think about their personal health choices such as refusing offers of tobacco and alcohol or dialing 911 in emergencies. When young children are encouraged to share their reasons for healthy behaviors, they may be more likely to reduce health risks. Teachers might also use cooperative learning, problem-based learning, or service learning to support health practices across the curriculum and advocate for personal, family, and community health.

Accomplished early childhood teachers are committed to ensuring children's safety. They equip children with the skills and knowledge to be safe on the playground, in the classroom, at home, in their neighborhoods, and online. They shield children from harm and readily educate and warn them about unsafe activities and hazards in the immediate environment. Accomplished teachers might use role-playing, discussions, or modeling to empower children to say no to safety hazards, inappropriate touches, or unsafe acts.

Accomplished early childhood teachers are aware of patterns of behavior that indicate health-related issues, and they are alert to any shifts in young children's behavior, appearance, emotions, or academic performance that may signal problems. If they notice any potential warning signs, they follow up with detailed observation and then talk with children and, as appropriate, with families. Teachers pay close attention to children's health questions and concerns. They cautiously evaluate situations and then, based on their interpretation of the information they have gathered, they determine appropriate next steps. Teachers access up-to-date health-related information, products, and services to promote child health, and they team with other health and educational professionals to coordinate the necessary supports for each child.

Accomplished early childhood teachers reach out to families to promote healthy habits for young children and communicate with families to share information on developmentally appropriate health habits and wellness routines. Accomplished teachers can inform parents about the latest findings on the role that health plays on cognitive growth and development. They encourage parents to set goals to reduce the number of hours children spend in passive play with media and to increase the time children spend being active in order to increase focus and to reduce stress. Accomplished teachers work with families to encourage children to get sufficient sleep and adequate nutrition in order to be alert and ready for learning.

Physical Education

Accomplished early childhood teachers know that physical education has an important impact on the development of the whole child. They understand that gross- and fine-motor skill development, healthy lifestyles, body coordination, and social skill development are essential to growth. They are familiar with research showing that physical fitness supports children's academic progress, improves posture, and helps address the issues of childhood obesity, attention to task, and classroom behavior. Teachers provide well-balanced physical education programs in order to promote the well-being of children including lifelong physical fitness. They are advocates for physical education and ensure that children engage in movement activities through informal as well as formal means. For example, young children might explore shapes made by their bodies while balancing on one arm and one leg, or might move with varying speeds through circular pathways while manipulating a ball or scarf. Accomplished teachers might engage students individually or in groups to explore other movement concepts using equipment, props, artwork, stories, and music to inspire movement.

Accomplished early childhood teachers are familiar with the essential principles of physical education including intensity, frequency, duration, and patterns of movement. They know that children typically use a variety of games, sports, dance, and fitness activities to express energy and emotions and to explore body awareness. Accomplished teachers use direct instruction with specific feedback to help children practice and integrate a variety of psychomotor skills such as running, walking, skipping, kicking, and jumping. Accomplished teachers provide a variety of physical activities to increase children's coordination, balance, agility, spatial orientation, sensory development, and kinesthetic awareness. For example, they might use stability balls and balance boards to stimulate the body in ways that increase opportunities for sensory integration, which in turn maximizes children's growth and development. Children who are active on a daily basis can increase their confidence and understanding of who they are and how they grow.

Accomplished early childhood teachers provide sufficient time and varied settings for children's physical activities in the classroom and beyond, such as during recess, physical education, and outdoor field days. Teachers of younger children know that appropriate and frequent periods of physical activity are essential for developing fine- and gross-motor skills, including cognitive skills, and for satisfying the young child's need to be active. Teachers are creative and imaginative in seizing opportunities to have children dance, mimic animal movements and move during transition times by hopping, crawling, or dancing to the next activity. They ensure that children have appropriate supervision, and they model physical activity patterns for children.

Accomplished early childhood teachers recognize that children have different needs and limitations and that no two children are at the same level of physical development at the same time. Teachers accept children as they are and give them the experiences and opportunities necessary to learn the skills they need. Teachers work with physical educators, physical therapists, occupational therapists, nurses, and parents to provide movement and fitness opportunities for all children.

Accomplished teachers also help all children understand how to work and play with others who have physical or sensory limitations.

Accomplished early childhood teachers understand that games and sports help to teach rules and regulations as well as dispositions for cooperation, respect, and sportsmanship. Teachers provide time for cooperative and competitive games, outdoor play, movement relays, and free-choice activities as important ways to increase personal and social interactions and to help release tension in an enjoyable context.

Technology

Accomplished early childhood teachers use pedagogies that support young children in learning how to use technology as a tool and how to become critical consumers of technology. They evaluate technology as critically as they would any other learning resource, applying such criteria as whether or not the content is developmentally appropriate; linked to curriculum, goals, and learning standards; flexible enough to accommodate the individual needs of all children; and appropriate given the cultural context of the community, families, and children with whom teachers work. Teachers are purposeful in making decisions about when and how to use technology as a vehicle for learning.

Accomplished early childhood teachers are competent with an array of technology, including visual, audio, and assistive technologies as well as computer software and hardware. They are aware of the ever-changing nature of technology, and they stay abreast of new technological developments. Teachers know that technology, used appropriately, has the potential to positively influence children's development and learning.

Accomplished early childhood teachers understand the importance of interacting with young children as they explore technology, not only to protect the devices and ensure child safety, but to expand the learning opportunities that the technology offers. Teachers use various forms of technology to enhance children's natural sense of curiosity and ability to learn. Accomplished teachers understand young children's attitudes toward technology and their ability to interact with it. They also know how young children tend to engage with and think about technology and are familiar with the problems that children typically encounter. For example, an older child may think that calculators always provide the right answers, and a younger child may experience dissonance between the movement of the mouse on the table with the movement of the cursor on the screen. Accomplished teachers anticipate and resolve such issues.

Accomplished early childhood teachers show children how to use technology throughout the curriculum to identify, organize, communicate, collaborate, create, illustrate, demonstrate, research, and collect data as well as to produce presentations, artifacts, and documents. Accomplished teachers ensure that children understand how to use technology safely and cooperatively. Teachers can discuss technology using terminology that is both developmentally appropriate and accurate.

They facilitate children’s use of technology to communicate within and beyond the classroom walls, to work collaboratively, and to support individual and group learning. Accomplished teachers find ways to personalize technology to assist the learning of each child.