



MAIN POINTS FROM MIND IN THE MAKING

1. Children are born, engaged in learning, but this engagement fades for far too many of our children.
2. Children are also born wired to understand different kinds of knowledge. For example, infants have a statistical-like capacity to pick out which sounds go together in their own language (a language sense); or to tell the difference between large and small numbers of things (a number sense); or that people have intentions and that there are differences between people who are helpful and hurtful (a people sense).
3. While we may be aware of how important it is to build on these inborn capacities and teach them the information they need to know, we are less aware of the importance of helping children gain the essential skills that are so necessary for children to acquire for a lifetime of learning.
4. Each of the essentials skills listed below takes place in the prefrontal cortex of the brain. These skills are as important as IQ to children's success now and in the future.

Essential Skill	Research Basis	Implications: Parents and Educators Can...
<p>SKILL ONE: FOCUS AND SELF CONTROL</p> <p>Paying attention, remembering, thinking flexibly, and exercising self control (not going on automatic, but doing what you have to in order to pursue a goal).</p>	<p>1. Jeanne Brooks-Gunn of Columbia University and a group of other academics reviewed six studies that followed children over time, offering a rare opportunity to evaluate what kinds of skills or knowledge acquired early in life matter most to children’s later successes. Out of literally hundreds of analyses, only three skills mattered. Two are obvious: reading and math skills, but the third skill is less obvious; it is “attention skills.” The more penetrating our attention, the richer and deeper children’s learning.</p> <p>2. Michael Posner of the University of Oregon and his colleagues gave four-year-olds and six-year-olds five days of training in attention skills on the computer and compared them to comparable groups of children with no training. They found that by improving children’s ability to pay attention, children’s self control, reasoning and thinking skills also improved.</p>	<ul style="list-style-type: none"> * Encourage children to pursue what interests them. When children have deep interests, they become more motivated and pay more attention to what they are learning. * Play games that require children to pay attention, remember the rules, and follow directions—I Spy, Red Light/Green Light, Simon Says. * Have children (preschool age and older) play sorting games where the rules change: first ask them to sort by color, then sort by shape. This game has children remember the rules and then resist the temptation to go on automatic and keep doing what they were doing. * Play other games where children (preschool age and older) can’t go on automatic: for example, ask them to say “night” when they see a picture of the sun and to say “day” when they see a picture of the moon. These games help them gain more self control.

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<p>SKILL TWO: PERSPECTIVE TAKING</p> <p>Understanding that other people have different likes, dislikes, intentions, thoughts, and feelings than you do.</p>	<p>1. In an experiment called Broccoli and Goldfish Crackers created by Alison Gopnik of the University of California at Berkeley and Betty Repacholi of the University of Washington, a experimenter makes it clear to a child that she dislikes the crackers but likes the broccoli, then asks the child to “give me what I like.” A 14-month-old will give the adult what the child likes (crackers) but by 18 months, the child will give the adult what the adult likes (broccoli).</p> <p>2. Studies have found that children who are aggressive have trouble understanding the intentions of others. Larry Aber of New York University and his colleagues evaluated a curriculum that uses children’s books, discussions, writing exercises, and role-play situations to teach children to understand other people’s intentions. Children who have experienced this curriculum are less likely to jump to conclusions about the behavior of others; they are less aggressive; and their reading scores go up, too!</p>	<ul style="list-style-type: none"> * Help children feel understood: for example, imitate a sound that an infant is making, repeat back words that a toddler is saying, or help your child find a way to express what he is feeling or thinking. Feeling understood helps children understand others. * Help children interpret the viewpoints of others—what they want, what they like, etc. One study found that when parents talked this way about a new baby with the baby’s older sibling, the siblings got along better when they were school aged. * View fights as an opportunity to teach children how to deal with conflict constructively. Ask them to suggest ways to resolve the conflict that take the other person’s perspective into consideration. Then have them try out the suggested solution and evaluate how it is working. * Talk about feelings (yours and theirs): “You know how you sometimes have a time-out when you are upset? I need some time to myself and then I will be better.” * Use books and stories to teach children “appraisal skills”—to figure out the intentions of the characters in the book.

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<p>SKILL THREE: COMMUNICATING</p> <p>Putting aside our own perspective so that we can understand the viewpoints of others and thus express ourselves and be heard.</p>	<p>1. Anne Fernald of Stanford University found that parent talk, the singsong way we talk with babies—slowing down our speech, stretching out and enunciating sounds over two octaves—helps children learn to understand language and to speak.</p> <p>2. Jenny Saffran of the University of Wisconsin has found that babies —just four months short of their first birthdays—can detect statistical patterns to determine the beginnings and endings of words in what Saffran has called a “sea of sounds.”</p> <p>3. Children whose mothers used more complex talk with them at 18 months, not only had larger vocabularies but were faster to process spoken language six months later, according to a new study by Anne Fernald and her colleagues.</p> <p>4. In taping family dinner time conversations when children were three and then studying these children through elementary school, Catherine Snow of Harvard found that children with better literacy skills had parents who 1) talked about more than the “here and now;” 2) used a sophisticated vocabulary; and 3) supported their children interests in books, talking, and reading.</p>	<p>* Use parent-talk with your baby. Also use parent look (look at what you want your child to see and name) and parent gesture (point to what you want your child to notice). All of these help children learn to learn words, to use language and to communicate.</p> <p>* Play games that help children detect differences in sounds, like rhyming or word guessing games.</p> <p>* Narrate children’s experiences. Think of yourself as a sports announcer, giving a play-by-play description of what is happening: “Oh, you just woke up. Are you hungry?” But be sensitive to the times when the kids want to tune out.</p> <p>* Talk about children’s interests. Their interests are the launching pads for building communication skills. Use complex and descriptive words.</p> <p>* Ask questions of children that encourage them to go beyond the “here and now” by thinking about the past and projecting into the future: “what do you think is going to happen next?”</p> <p>* Tell stories about your life and ask children to tell stories about theirs. When children are toddlers and older, write down their stories.</p> <p>* Read with children often but read in a way that uses books as a platform for conversations.</p>

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<p>SKILL FOUR: MAKING CONNECTIONS</p> <p>Putting information into categories—figuring out what’s the same and what’s different; seeing out how one thing relates to or represents something else; and finding unusual connections.</p>	<p>1. Liz Spelke of Harvard University, and Fei Xu of the University of British Columbia, found that babies as young as six months old have a number sense—they can detect that there are differences between smaller and larger groups of things, such as eight and 16 dots, eight and 16 jumps of a puppet or honks of a horn. Families can build on this number sense to help children learn to make connections.</p> <p>2. It takes a longer time for children to learn that one thing can stand for something else. For example, Judy DeLoache of the University of Virginia found that two-and-a-half year old children were not able to find a hidden object in a life-sized room, even though they had watched an exact replica of that object hidden in the same place in a miniature version of the room. With older children, parents can help children learn that one thing can represent another (a picture of an animal represents that real animal).</p> <p>3. Robert Siegler from Carnegie Mellon University and Geetha Ramani of the University of Maryland found that a simple board game based on Chutes and Ladders helped children see connections among numbers and learn math skills, such as counting and numerical magnitude.</p> <p>4. Philip David Zelazo of the University of Minnesota showed children a series of cards with pictures on them and asked the child to sort the cards by color and then by shape. Three year olds had great difficulty with this task, which requires them to remember two rules at the same time, inhibit an automatic response, think flexibly, and reflect. This kind of thinking takes place in the prefrontal cortex of the brain as children move into the preschool years and is critical to learning.</p>	<p>* Help children see connections in their everyday lives. With preschoolers, tear out pictures of things on your marketing list and have children find them on the store shelves.</p> <p>* Use “math talk” in everyday conversations and play: “You’re eating two cookies” or “I’m holding three fingers up.”</p> <p>* Play board games that provide opportunities for matching—animals, letters of the alphabet, colors and dominoes</p> <p>* Play games that help children preschool age and older make unusual connections, such as asking them how two things go together in one way and then how they go together in another way. Learning to see unusual connections is the basis of creativity.</p>

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<p>SKILL FIVE: CRITICAL THINKING</p> <p>The ongoing search for valid and reliable knowledge to guide beliefs, decisions and actions.</p>	<p><u>The Problem:</u></p> <p>1. Judy DeLoache of the University of Virginia and her colleagues had children (ages 4-7) watch as an experimenter demonstrates that a magical machine can transform things in a variety of impossible ways, such as making a toy hamster into a real hamster. They found that children are surprisingly willing to believe that all sorts of impossible transformations.</p> <p>2. One of the hardest aspects of critical thinking to teach is when there could be more than one cause to an effect, as demonstrated by the studies of Laura Schultz from MIT. So how do children learn to separate fact from fiction, to understand cause and effect?</p> <p><u>Some Solutions</u></p> <p>3. Talk to children about everyday science in their lives, as revealed by the experiments of Maureen Callanan of UC Santa Cruz.</p> <p>4. Have children create experiments to test cause and effect and teach them directly how to know “for sure” what causes what, as demonstrated by the research of David Klahr from Carnegie Mellon</p>	<ul style="list-style-type: none"> * Promote children’s curiosity: don’t jump in too quickly to fix things they are struggling with. Where possible, help them figure out <u>how to</u> resolve it for themselves. * Model critical thinking by encouraging children to ask questions. If you don’t know an answer, look it up together. * Think about your friends, your family, your neighbors, and your colleagues as “experts” who can share their experiences, their knowledge, and their passions with your kids. * Encourage children to evaluate the reliability of information they receive from others. You can ask: “How can you find out if this information is true?” As children get older, help them learn about fact checking, of looking up information from a reliable source.

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<p>SKILL SIX: TAKING ON CHALLENGES</p> <p>Being resilient in the face of stress, trying new experiences, being proactive in standing up to difficulties.</p>	<ol style="list-style-type: none"> 1. In a review of the research on stress and children, the National Scientific Council on The Developing Child concludes that stress caused by everyday challenges are positive and an essential feature of healthy development. The impact of more severe stress is not necessarily negative. It depends on how long a severe stress lasts and whether there are supportive adults who can help children learn to cope and recover. 2. In an experiment by Joe Campos of the University of California at Berkeley, infants from nine to 12 months are put on a table with a checkered pattern just beneath the surface. The child's mother is at the other end of the table holding out an appealing toy. The parent smiles at the baby until she or he reaches a visual cliff, where the checkered pattern on the surface ends and the child can see to the floor below (though the Plexiglas table top continues so it is safe). If mothers show a fear face, the baby typically does not cross this visual cliff; if the mother smiles, the child is much more likely to cross over to her. This study demonstrates the role that nonverbal communication plays in determining how children respond to fearful situations. 3. Some children are born more fearful and anxious than others. Studies by Nathan Fox of the University of Maryland show that parent can help children overcome this genetic difference and become more comfortable with new or stressful experiences. 4. Carol Dweck of Stanford University has found that the children who avoid challenges tend to have a "fixed mindset:" they see their intelligence as a fixed trait and therefore are reluctant to undertake challenges that "stretch" them. The children who are willing to take on challenges have a "growth mindset" where they see their abilities as something they can develop. 	<ul style="list-style-type: none"> * Be aware of how you are communicating stressful experiences to children—they will "read" and respond to your anxiety. * Get support. Parents without people to whom they can turn for help are less able to help their children with challenges, according to Nathan Fox. * Fox has also found that parent who are "interfering"—they manage everything that their children do or "alarmist"—they see danger everywhere, are more likely to increase their children's anxiety and stress. * Praise children's efforts. Carol Dweck has found that when adults praise children's efforts—"you are working hard"—versus their personality—"you are so smart," they are more likely to have children who take on challenges.

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<p>SKILL SEVEN: SELF DIRECTED, ENGAGED LEARNING</p> <p>Remaining a seeker of knowledge and skills.</p>	<p>1. There are three “gold-standard” early childhood programs, so called because these programs have been rigorously evaluated over the past four decades and the finding have revealed that these programs have had a long lasting positive effects on their children who attended them. When asked what they did that made the biggest difference, the developers and evaluators of these programs—Larry Schweinhart of the Perry Preschool Project, Craig Ramey of the Abecedarian Project and now at Georgetown University and Arthur Reynolds of the Chicago Child-Parent Centers now at the University of Minnesota—each talked about these programs becoming “a community of learners,” places where administrators were learning, teachers were learning, parents were learning, and children were learning.</p>	<ul style="list-style-type: none"> * Provide direct and involving first hand experiences for children. * Encourage children to explore and form theories about their experiences. * Extend and elaborate their experiences. * Give children opportunities to explain what they have learned. * Create a community of learners for yourself and children.