



Of Primary Interest

Using Brain-Based Teaching Strategies to Create Supportive Early Childhood Environments That Address Learning Standards

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Learning (or content) standards are intended to set the bar for student achievement. They can help create equity among learners by ensuring that all children are prepared to meet the challenges of an increasingly complex, demanding world. Although standards vary state by state, they generally have similar broad goals for children in the primary grades (National Institute for Early Education Research 2008). As they mature and develop from ages 5 to 8, young children are expected to achieve the following:

1. develop as effective readers;
2. expand their abilities to use complex mathematical applications;
3. deepen their understandings of science concepts; and
4. broaden their social studies skills and learn the concepts necessary to be responsible citizens.

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Many learning standards also address a wider range of skills children can master in technology, art, music, theater, health education, and physical education. The Early Childhood Education Assessment Consortium of the Council of Chief State School Officers defines early learning standards as

Statements that describe expectations for the learning and development of young children across the domains of: health and physical well-being; social and emotional well-being; approaches to learning; language development and symbol systems; and general knowledge about the world around them. (CCSSO 2008)

This definition is broad in nature, specific to domains, yet consistent with nurturing the whole child. It is also compatible with brain research timetables for neurological wiring.

It's important to understand that standards are *not* intended to fence in creative teachers or to become obstacles for learners with special needs. Instead, they can guide, support, and encourage enterprising and knowledgeable primary teachers to create intriguing and motivating educational environments and experiences that are developmentally appropriate for each child and optimize learning for all (NAEYC & NAECS/SDE 2002).

Creating conditions for success

Enormous potential exists in applying early brain development research findings to the implementation of learning standards. Here are three research findings that can be used with learning standards to optimize learning.

Experiences impact the architecture of the brain. At birth the human brain is in an amazingly unfinished state. The hardware is present but the connections are yet to be made. The child's experiences in the larger world result in connections that are reinforced as the experiences are repeated. This becomes the neural circuitry that lays the foundation for the child's lifelong learning (Shonkoff & Phillips 2000).

A predictable process assists the brain in channeling stimuli into long-term learning. When teachers present information in a sequence that supports this process, it is much easier for children to learn (Sousa 2006). To help children focus on a lesson, begin by asking them a relevant question or showing them intriguing photos. When presenting the actual content (learning standard) of the lesson, show children how the new information is similar to other information familiar to them. Point out any patterns that occur in the new information. Allow children to practice using new information, through hands-on activities when possible. Finally, encourage children to think about how they will use the new information and to ask themselves, How is this information relevant to my life?

Environmental influences—such as safety, emotions, novelty, humor, music, choices, physical movement, and hands-on activities—**can contribute to increased alertness and memory** (Jensen 2001). Keeping these influences in mind when implementing learning standards sets the stage for success.

Applying brain research in implementing learning standards

Standards guidelines and brain research findings are the tools needed to implement standards. Then the following brain-based strategies become a means to optimize learning for all children.

1. Safe environments matter

Safety and well-being come before anything else. The brain attends to these needs first. A child who comes to school hungry, ill, or frightened by something that happened on the way will find it difficult, if not impossible, to focus on what is going on in the classroom. Children will struggle with learning if they feel afraid because a classroom setting is too restrictive, a home environment is very demanding, or a classmate's behavior is aggressive. To evaluate what changes are needed, take these steps:

- **Make sure the physical classroom is free of anything that could scare a child.** For example, some kindergarten children (ages 5 and 6) may be afraid of certain classroom pets or science specimens, such as snakes or spiders. What have you included in your science center? Are children spending the day checking on the snake in the aquarium to make sure it has not escaped?
- **Start the children's day with a safety ritual.** For example, try a greeting such as, "We are safe when we are at school" or "We are a community of

learners who take care of one another.” Positive affirmations help to reduce fears. For children with special needs, such as autism or anxiety disorders, create a symbolic representation of a safe haven. Have the child place his name or photo in a classroom box with a lid, then close it to represent his being safe inside.

- **Remind children they are in your safekeeping.** Reassure children who have emotional challenges or who have difficulty separating from a parent. Explain that your job is to keep them safe while they are at school. Listen to a timid child and acknowledge her fears. Then redirect her attention to an engaging activity or invite another child to be her peer buddy. Encourage the buddies to do an activity together. Never dismiss a child’s fear, even if it seems irrational to you.

2 ■ Emotions are effective tools

Emotions affect memory and brain function. When a person feels content, the brain releases endorphins that enhance memory skills (Jensen 2005).

- **Start the day with humor.** Tell a funny story or share a silly picture. Laughing makes children feel secure and content.
- **Sing a few songs together.** Incorporate dance and movement with singing whenever possible. Children can draw, paint, or do other creative projects while listening to various types of music.
- **Sequence and pace daily activities.** Children can feel overwhelmed by too much new information and unfamiliar materials. After presenting new information, give children time to practice and reflect on what they are learning.
- **Help learners feel in control of their learning.** Researchers tell us that keeping lessons short and relative to the topic is more compatible with the brain’s processing ability (Sousa 2006). You can use several strategies to help children master large amounts of information over time. For example, break down activities or routines into steps. Display pictures of each step to teach and remind children of what to do next. This works particularly well for children with special needs, such as a child with cognitive delays, autism, or a language delay.
- **Be proactive.** Use guidance strategies that reflect the natural or logical consequences for inappropriate behavior rather than threats and punishment. Negative emotions can impede learning. For example, if you know that a child has difficulty transitioning from indoor to outdoor play, alert him before the transition so he knows what is going to happen next.
- **Nurture social and emotional intelligence.** Children must learn to follow directions, work with others, stay on task, finish their work, and take initiative to master new information. They also must learn to control their verbal and behavioral impulses, solve problems, and take responsibility for their own actions (Bilmes 2008). Nurture these skills by providing time for cooperative learning, collaboration, and teamwork.

3 ■ Multisensory practices make sense

The more senses involved during learning, the more likely the brain will receive and process information. By using multiple senses to learn, children find it easier to match new information to their existing knowledge (Schiller 1999; Willis in press).

- **Use real materials.** Familiar and tangible objects demonstrating concepts can help make ideas concrete. For example, rather than talking about birds with

5- and 6-year-olds, go outside to observe them, then make a graph of all the different birds the children see and hear. Seven- and 8-year-olds might begin classifying birds by common characteristics or migration patterns.

• **Use chants and rhymes.** Rhythmic patterns stick in the brain. For kindergarten, use *Chicka Chicka Boom Boom*, by Bill Martin Jr. and John Archambault, to teach the alphabet. For first and second grade, use a chant like the one below to practice spelling words.

It's time to spell!

Let's show what we know.

It's time to spell!

Ready, set, go!

Shhh, shhh, shhh, shhh, shhh, shhh

Spell bear.

Bear. B-e-a-r.

Shhh, shhh, shhh, shhh, shhh, shhh

Spell chair.

Chair. C-h-a-i-r.

[Continue the chant with more words.]

(Schiller unpublished; for other chants and rhymes, see Schiller & Willis [2008], pp. 262–65)

- **Make it fun!** Sing, dance, play games, and laugh. These activities use multiple senses and at the same time increase memory (Jensen 2005).
- **Provide natural environments.** Use places where an activity would ordinarily occur—home, school, outdoors, the zoo, or anyplace where learning is more meaningful than sitting at a desk. For example, when studying nature, go outdoors for a nature hunt rather than show children pictures of trees. Teach a child with special needs, such as Down syndrome, how to brush his teeth in the bathroom instead of the classroom.

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■ Differentiated teaching practice is supportive

The term *differentiated* once meant that teachers planned ways to address children's differences in age, development, and learning styles. Now, this term encompasses everything that makes a child unique, such as culture, family, temperament, multiple intelligences profile, personality style, and special needs or developmental delays. These differences are even greater in the primary years because young children develop on individual timetables that often vary greatly. Primary teachers may wonder if it is even possible to teach every child as an individual. They can begin by first looking at how learning is consistent.

- **Provide a focus to hold children's attention.** This might be a photograph, a finger play, a song, or a provocative question. For example, in the primary grades, play a song in French before starting a discussion about France.
- **Break teaching into small parts.** Children are better able to focus on important information when they receive less, rather than more, information. When first-graders are learning about animals, focus on one species at a time. Teach the two critical attributes of mammals: they nurse their young and they have hair. Have the children sort animals into mammals and nonmammals. When they are successful, use the same process to add reptiles and eventually amphibians and birds.

- **Provide hands-on practice.** Hands-on manipulation increases the chance by 75 percent that new information will be stored in long-term memory (Hannaford 1995; Sousa 2006). Hands-on investigation increases sensory input, which helps learners focus. It allows for experimentation by letting children use trial and error, which increases the chance that learners will make sense of and establish relevancy for what they are learning (Sousa 2006).

- **Use an integrated approach.** Combine math, reading, spelling, and writing to teach children about plants. To extend learning, have the class plant a butterfly garden together. Offer the children feedback on their progress, and build in time for their reflection.

Application of these strategies and commitment to the concept that all children learn based on their development and experience level make differentiated teaching possible in every classroom.

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■ Special needs are met through planning

In today's blended or fully inclusive classrooms, children with special needs (visual or hearing impairments, cognitive challenges, motor or speech/language delays, or emotional/behavioral issues) learn in the same environment along with their peers (see Schiller & Willis 2008). This can be a positive experience for all children when teachers shape their practices to do the following:

- **Present concepts in simple steps.** Provide materials that enable a child who cannot fully participate in an activity to be engaged with his peers and to participate in his own way. For example, a child with language delays might work with a peer to write a journal entry together.

- **Look for ways to modify tools and materials.** Provide pencil or crayon grips for a child with motor challenges or picture schedules for a child with communication issues.

- **Recognize signs of developmental delay.** Be alert to a child whose development appears to be delayed, and provide extra opportunities for the child to practice using new information. Try several methods to introduce learning concepts.

- **Set appropriate goals.** Goals for learning should fit a child's age and stage of development. For example, most of the class may work on identifying letters, while a child with special needs, such as a cognitive or general developmental delay, learns the first letter of her name.

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■ Sense and meaning are essential

The brain processes new information by making sense and meaning of it (Sousa 2006). The process of sense making requires finding the patterns. One way to do this is by having children ask themselves questions, such as, How is this new information like the information I already have? How is it different? What parts of this information do I understand? Which parts are confusing?

For information to have meaning children must find its relevance. Teachers can help children when they

- **Tap into prior knowledge.** Review what the children already know before introducing new information. Point out any patterns in children's prior knowledge that overlap with new information. For example, "Remember last week,

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when we talked about the days of the week and we found them on a calendar? Today we are going to talk about the months of the year, which are also found on a calendar.”

- **Use organizers.** Graphic organizers help children to see relationships between several pieces of information. Story maps, word wheels, and K-W-L (a chart or graphic representation that reflects “What I know, What I want to know, and What I just learned”) work well with kindergarten children and first-graders.
- **Provide hands-on practice.** Offer Wikki Sticks and magnetic, sandpaper, and three-dimensional letters to help children learn alphabet letters.
- **Give the children time to reflect.** After a group activity or discussion, teachers can ask questions such as, How will you use this new information? How would what we learned today be different if _____? How do you feel about _____?

Conclusion

With careful planning, knowledge of brain research findings, and a little creativity, primary teachers can offer engaging, brain-based activities that encourage exploration and learning and support learning standards. Teachers and children can build a strong community of learners who see learning as an opportunity to be successful problem solvers while anticipating each new challenge as another exciting adventure.

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