

Brain Development

The Challenge

The research is in. And it confirms what early childhood educators have been saying for years: The experiences and learning in the first five years are the most formative in a human being's life.

Many people don't realize how important the first five years of life are, and our society demonstrates this in many ways. Historically, the "age of reason" begins at age seven. Adults tend to assume that "real" learning begins in grade school. Pay for early childhood educators is lower because the traditional assumption is that child care is the same as baby-sitting.

There are many indications of the importance of the first five years. The work of Maria Montessori, Jean Piaget, and others showed how children build their understanding and response to the world around them. Early childhood educators can evaluate children at ages three or four and make amazingly accurate predictions about their likely success or failure in life.

The Committee for Economic Development conducted studies that concluded every dollar invested in early childhood education saves three dollars in later remediation.

The Opportunity

New research on brain development provides physical proof of what early childhood educators have been saying for decades. Young children actually build their brains through their experiences.

The actual "wiring" of the brain grows in response to what children touch, hear, taste, smell, move, and feel emotionally. The right kinds of experiences develop the brain's abilities. The wrong kinds of experiences build a brain lacking some skills and possibly inclined toward antisocial behavior.

Sharing this information with parents and future parents can wake them up to the importance of nurturing their young children. Educating the community can spark discussion on child care,

parent support, health, nutrition, and safety.

What We Know

The numbered statements below are the summary conclusions about brain development reported in the book *Rethinking the Brain*, by Rima Shore:

1. Human development hinges on the interplay between nature and nurture.

The brain is built of connections between cells. The brain sends signals across more of these connections as it experiences more and learns new skills. The connections that aren't used fade away.

This process of building connections and sending impulses across them starts before birth and continues intensively for about three years. Born with 100 trillion connections, a child's brain connections peak at about 1,000 trillion. By age 20, the brain reaches its adult level of about 500 trillion connections. The connections that remain are the ones the brain uses.

2. Early care has a decisive and long-lasting impact on how people develop, their ability to learn, and their capacity to regulate their own emotions.

The emotional connection of an infant or child to his caregiver affects the chemicals in the brain. A child who feels secure and safe grows more quickly, copes better with stress (which keeps destructive chemicals out of the brain), and more quickly understands complex ideas like causality. A mother's depression slows brain development and reduces her child's ability to respond to others.

3. The human brain has a remarkable capacity to change, but timing is crucial.

There are "prime times" in a child's growth when the brain is poised to develop in certain areas, and it will strengthen or grow connections most readily in response to certain experiences at these times.

Visual and auditory stimuli, for example, promote synaptic development most quickly in the second and third months of infancy. However, a lack of exposure or damage to the brain can be overcome to some degree by intensive intervention. For example, a young child who has had half his brain removed because of epilepsy will relearn skills originally developed in the lost half of the brain. And, the

remaining half-brain will grow larger.

4. There are times when negative experiences or the absence of appropriate stimulation are more likely to have serious and sustained effects.

Trauma, abuse, neglect, lack of stimulation or social exposure—all of these interfere with healthy brain development. The result can be a brain underdeveloped in some areas and overdeveloped in others, creating a brain prone to anxiety, depression, an inability to form social attachments, emotional immaturity, a predisposition to anger or violence in response to any frustration, or impulsiveness. Maternal depression, substance abuse, or institutionalization can have these effects—but the most common root cause is poverty.

5. Evidence amassed over the past decade points to the wisdom and efficacy of early intervention.

Numerous studies show that helping children during their first five years produces the greatest, lasting improvements cognitively, socially, and emotionally. Help may include early childhood education, family counseling, home visits, health and nutrition services, and speech therapy. The earlier children receive intensive care and education, the

greater and more lasting the impact.

What Clubs Can Do

Young children will benefit when the public truly understands the developmental importance of the first years. Parents and caregivers will provide more developmentally appropriate activities for children, and the public will support greater investment to help children develop, grow, and learn

Kiwanis clubs can help bring this about by educating members and the public. In this section are project ideas that clubs can implement and referrals to the Young Children: Priority One service bulletins that outline good projects.

Clubs may also contact the organizations listed in the longer, reproducible brochure, "Our Babies and Their Brains," from which the club can collect more information on this issue.

Print and distribute brochures—There are two brochures at the back of this bulletin, ready for you to apply local club information and print. The shorter one is aimed at a low-literacy reader. Give copies to club members. Provide them to pediatricians, child care centers, health clinics, Head Start centers, pharmacies (especially if they can be placed in the "baby aisle"), grocery stores, toy stores, and other locations visited

by parents of young children.

Find a local expert—

Identify someone who has read about brain development in children and would like to educate the public. This may be an early childhood educator, a pediatrician, or a Kiwanian who has attended training at the International convention. You may be able to find a speaker through the state association for the education of young children, the pediatric association, or one of the organizations listed in the brochure at the back of this bulletin. Meet with the expert to explore the best ways to educate the public—especially new parents.

Have the expert speak—

Schedule the expert as a program at your club and promote this as a perfect inter-club opportunity for club committees on Young Children: Priority One and Youth Services. Or, schedule the presentation for an evening at a school or community center. Work with pediatricians, child-care providers, and schools to promote the speech.

Send in the op-ed piece—

Adapt the op-ed piece, putting in local statistics or anecdotes, and send it to the community's newspaper or a more specialized publication aimed at parents.

Improve early childhood programs—

Programs that provide developmentally appropriate, nurturing care for infants, toddlers, and

preschoolers have a tremendous positive impact on children. Many programs, from Head Start to home care providers, need additional materials, training, or facilities. Clubs can consult the service bulletins on Head Start (PO #2) and Child Care (PO #20) to learn more, or they can consult local care providers. Additional enrichment activities appear in the Reading Is Fundamental (PO #2) and Intergenerational Projects (PO #21) bulletins.

Help parents—Parents need access to services—or need to know how to find them. They need to learn more about how children develop and techniques for raising them. The bulletins on Parenting Fair (PO #5), Child Abuse Prevention (PO #10), Parents Anonymous (PO #12), Parenting Education (#13), Home Visitation Programs (PO# 17), and Play Days (PO #19) all suggest ways to educate or assist parents.

Improve health

outcomes—Major impacts on children's health come from mothers smoking or drinking during pregnancy—including low birth weight, prematurity, and developmental delays or impairments. Health experts agree that children should have all their immunizations by age two to avoid the debilitating effects of common diseases. In the United States, one child in 20 still suffers from lead poisoning, affecting the central nervous system,

kidneys, and blood. Clubs can consult the bulletins titled Smoking Awareness Campaign (PO #4), Alcohol Awareness (PO #15), Immunizations (PO #14), and Preventing Lead Poisoning (PO #16) for project ideas.

Protect children from injury—More children under the age of nine die from preventable injuries than from any other cause. Clubs can consult these bulletins in this area: Burns (PO #3), Pediatric Trauma (PO #8), Home Safety Checklist (PO #9), Shaken Baby Syndrome (PO #11), and Playgrounds (PO #18).

Brochures and Order Form

On the next four pages are two brochures ready for you to reproduce. The first is a shorter, easy-to-read version. The second provides more information and may be more persuasive. On the back cover is an example of an op-ed piece, which can be adapted to outline club projects and submitted to local newspapers.

Op-Ed Piece

Retype this piece, adding a paragraph or two on the Kiwanis projects for young children in your community. Then, send it to the local newspaper editor and ask that it be run opposite the editorial page or as a letter to the editor.

Invest in Our Young Children

As your grandmother may have told you, “Well begun is half done.” And that is an idea we need to apply to children in our community.

Over the past decade, there has been tremendous research indicating that children’s brains actually build themselves in response to their environment. Nurturing parents actually help their babies build brains in particular ways. The brains build structures and use chemicals that make the children more loving, secure, and able to connect with other people.

Opportunities to explore, experiment, and play can develop brain connections that increase coordination, develop curiosity, and establish conceptual frameworks for sophisticated learning, such as logic and mathematics. Talking to babies starts the brain-building process that will make them native speakers of a language.

A recent book titled *The Myth of the Early Years* criticizes the many recommendations to parents that seem to imply the only important work of parenthood is in the first five years. Surely, a commonsense review of our own lives tells us that parents, other adults, schools, and peers all have tremendous impact on how we mature, what we learn and believe.

The important message of the brain development research is that the extent of our full potential is defined in those early years. Take the example of language development. When a baby starts babbling, he makes many sounds that aren’t used in his parents’ native language. Simply by listening to his parents, he eliminates unnecessary sounds and repeats only those he hears. He builds the pathways in his brain to recognize and reproduce those sounds. Then, he starts assembling those sounds in the words with which he’ll communicate.

A young child can go through this process for one language or for several quite easily. As an adult, we can still learn another language, but it is generally a long, hard process. And we can never master the accent and intonation as a child does. This generalization can be applied to many kinds of learning and behaviors. In early childhood, the learning is virtually automatic if adults provide the right environment. That same learning or skill or behavior requires greater effort or remediation if learned later.

What we all should remember is that the best investment we can make is in children’s early years. For our community, that means we should support:

- Health care (both preventive and primary) for expectant mothers and children.
- High-quality child care and training for child-care providers.
- Flexible work environments that help parents care for their children.
- Programs that assist or educate parents to provide loving, supportive, developmentally appropriate environments for their children.
- Safe houses and neighborhoods free of violence, abuse, and racial hatred.
- Parks, playgrounds, museums, and activities that provide safe, fun opportunities for children to explore and learn.

There are many challenges in that list. We cannot successfully address all these needs immediately, but we must take the actions we can. Kiwanis clubs have addressed the needs of young children since 1990, and Kiwanians still see much that they should do.

(Consider inserting a paragraph here on what Kiwanis clubs are doing for young children in your community. For example: The four Kiwanis clubs in this community have addressed the needs of the community’s young children in four ways: developing a Reading Is Fundamental project for children in Head Start, supporting a training program for child-care providers, purchasing materials for the parenting resource corner at the library, and sponsoring the annual “Immunize Now” event. These programs can grow with additional community support, or there are many other ways you can help our children.)

Please consider the future of our community—and our country. The best investment we can make is in our children. Look for an opportunity to make that investment—either through Kiwanis or other organizations in our community.

Dangers to the Baby's Brain

Before the Baby Is Born

Drinking, Smoking, or drug use can damage your baby's brain. The effects range from learning problems to death.

Stress

Fear in a baby actually kills brain cells. A baby who gets scared often develops slowly. He may grow up too active and uncontrolled.

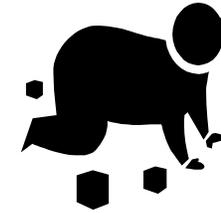
Shaking

Some parents shake their babies to make them quiet. This damages the baby's brain. This can cause mental retardation, fits, or death.

These ideas are from *The First Years Last Forever* and your local Kiwanis club.



Service Programs Department
Kiwanis International
3636 Woodview Trace
Indianapolis, IN 46268-3196 USA
www.kiwanis.org
service@kiwanis.org
317-875-8755, ext. 211 Worldwide
1-800-549-2647 North America
317-879-0204 Fax



YOUR BABY'S BRAIN



Your Baby's Brain

Long before your baby is born, his brain starts growing. And the brain keeps growing for more than five years after birth. Your child can learn throughout his life, but there are special opportunities in the early years.

The brain is made up of billions of brain cells and trillions of connections between them. The more connections the brain cells make and use, the more the brain can do.

Your baby's brain develops in response to what happens around her. And to what the baby does. Playing with the baby helps the brain grow. Making the baby feel safe helps the brain grow.

You Can Help

There are many things you can do to help your baby's brain grow.

Before the Baby Is Born

- See a doctor for checkups.
- Eat nutritious meals.
- Buy an infant seat that fits your car.

Keep Your Baby Healthy

- Take your baby to doctor checkups.
- Get all the baby's shots.
- Breast-feed if possible.
- Baby-proof your home using a home-safety checklist.

Respond to Your Child

- React to his moods.
- Listen to her.
- Play when he wants you to.
- Help her feel safe.
- Show that you care.

Talk and Sing

- Tell the baby what he's doing.
- Tell what you're doing as you work.
- Sing and play music.
- Tell stories
- Read books.

Provide Toys

They don't need to be expensive!

- Crayons and paper
- Stuffed animals
- Blocks
- Building Toys
- Balls
- Noisemakers
- Costumes
- Dolls
- Toy people
- Trucks and cars
- Planes
- Pots and pans



Help Your Child Explore

- Take her outside to play.
- Let him run, jump, and scream.
- Play with her in sand and puddles.
- Help him play with others.
- Help settle arguments.

Provide Guidance

- Let her say what she feels.
- Explain what you want him to do (not just what he shouldn't do).
- Describe your rules.
- Explain what will happen if she breaks the rules.
- Point out when he hurts others.

Show that you love her even when you dislike her behavior.

Control Your Home

- Do the same things each time for bedtime, naptime, and meals.
- Limit television and help choose shows.

Get Involved in Child Care and Preschool

- Talk to the care giver regularly.
- Learn what is happening each day.
- Attend class with your child.

Remember Every Child Is Different

- Every child grows up at his own speed.
- Every child has her own personality.
- Every child can succeed.

If You Need Child Care

Look for a Child-Care Center with:

- A low number of children per adult.
- Smaller groups of children.
- A well educated staff.
- Additional training for staff.
- Low staff turnover.
- Higher pay for staff.

Look for a Family Child-Care Provider who:

- Likes taking care of children.
- Knows how children learn and grow.
- Is educated.
- Gets training in child care.
- Plans activities for the kids.
- Is licensed.
- Has fewer kids for each adult.
- Charges more.
- Worries about safety.



This brochure provided by your local Kiwanis club.

Service Programs Department
Kiwaniis International
3636 Woodview Trace
Indianapolis, IN 46268-3196 USA
www.kiwanis.org
(317) 875-8755, ext 212 Worldwide
1-800-49-247 North America
(317) 879-0204 Fax

Our Babies and Their Brains

Your baby's brain started growing soon after conception, and it won't stop growing for more than five years. Your child can learn throughout his or her life, but there are special opportunities in the early years.

People used to think that a child's brain was like a computer. It arrived from the store (or stork) all ready to learn. Then, it was just a matter of loading the right software and data. In the case of the computer, this might take several hours. In the case of the child, it took several years.

But this analogy doesn't fit. A computer truly like a child's brain would come partially built—not ready to complete tasks but ready to finish building itself. You would spend time with it, and it would increase the complexity of its chips and create new wiring, adapting itself to work better at the tasks it encounters.

Your baby will build his own brain using the experiences that you help provide for him. Your child is the architect of his own brain. You are a very important facilitator.

Brain Building

A baby is born with some 100 billion brain cells, which are called neurons. These cells build pathways among them, sending out fibers called dendrites to receive impulses from the single output device of each cell, the axon. Each of these connections is called a synapse.

Each neuron can grow dendrite trees that connect it to as many as 15,000 other cells. As a result, a baby goes from having 50 trillion connections at birth to more than 1,000 trillion by age three.

Use It or Lose It

Not all of these connections are used. As the baby learns, certain connections are useful and get used repeatedly. Learning occurs with every activity the baby undertakes, from shaking a rattle to playing peek-a-boo, from stacking blocks to listening to a story.

The more the baby learns, the more connections are used. Those that aren't used are discarded during the teen years. About half of the connections, some 500 trillion, are kept.

Critical Periods

Different parts of the brain become active at different times. At two months, synapses form in the motor cortex and the baby starts making more purposeful movements. The sight center develops in the second and third months, and the memory system becomes fully operational by the ninth month. Between months six and 12, the area concerned with forethought and logic is twice as active as an adult brain.

During the first year, the brain assigns a cluster of neurons to identify each sound in a language. Sounds not in the language have no neurons assigned. The result is an "auditory map" for the sounds in the parents' language. This is why it's so important to talk and read to your baby.

For more information, contact:

I Am Your Child Campaign

P.O. Box 811246
Los Angeles, CA 90081
888/447-3400
213/477-2230 Fax
www.iamyourchild.org

Families and Work Institute

267 5th Avenue, Floor 2
New York, NY 10016
212/465-2044
212/465-8637 Fax
www.familiesandwork.org

National Association for the Education of Young Children

1509 16th Street, NW
Washington, DC 20036-1426
800/424-2460
202/328-1846 Fax
www.naeyc.org

National Child Care Information Center

301 Maple Avenue West, Suite 602
Vienna, VA 22180
800/616-2242
800/716-2242 Fax
www.nccic.org

Zero to Three

National Center for Infants, Toddlers, and Families
2000 M Street NW, Ste 200
Washington, DC 20036
202/638-1144
www.zerotothree.org

If You Need Child Care

Look for a Child Care Center with:

A high staff-to-child ratio.
Smaller groups of children.
A well educated staff.
Additional training for staff.
Low staff turnover.
Higher pay for staff.

Look for a Family Child Care Provider who:

Is committed to taking care of children.
Knows about child development and child care.
Is well educated.
Participates in child-care training.
Plans experiences for the children.
Is regulated by the state or local government.
Has a slightly higher number of adults per child.
Charges higher rates.
Has installed safety equipment and uses safety procedures.
Follows standard business practices.

This advice is adapted from The First Years Last Forever, from The Reiner Foundation.

Emotional Development

A nurturing caregiver is a key component to learning. From the very beginning, touching and interacting with the child affects growth, sleep patterns, and response to upsets.

As the child grows older, this interaction promotes better thinking skills, language development, and fewer behavior problems. A child with a secure attachment feels safe and will explore, resulting in a curious, confident learner

In contrast, erratic care can make the child dependent and anxious in later life. And unresponsive care can lead to emotional shutdown. A mother's depression in months six to 12 can permanently affect a child's behavior, thinking skills, and the ability to express or control emotion.

Potential Damage

Fear and stress produce hormones that kill brain cells, eliminate connections, and scramble signals. Chronic stress can shrink the areas of the brain responsible for emotion, attachment, and memory. The child may develop slowly or incompletely in thinking skills, problem solving, physical coordination, social interaction, and empathy.

However, stress promotes growth of the brain region for vigilance and arousal. So, the brain is aroused more easily, and it releases a new wave of stress hormones. This can cause hyperactivity, anxiety, and impulsive behavior.

Physical damage to the brain is also more likely in the first year of life. The immature brain is smaller within the skull—allowing room for growth—and lacks most of the fatty layer that will cover the brain. When a caregiver, frustrated by a baby's crying, shakes the baby, the immature brain bounces against the skull, often causing serious damage. The result is called Shaken Baby Syndrome. The baby may die or become mentally retarded, epileptic, or slow to develop skills.

Drinking, smoking, and drug abuse all take a toll on a child's brain before it is born. Regular exposure to alcohol can cause mental retardation, slow development, lack of physical coordination, and problems with language, fine motor skills, and behavior. Nicotine slows development and affects behavior. Cocaine can cause problems with attention, learning, memory, and physical coordination.

The Brain Builds to Spec!

In short, each child's brain develops to be successful in its environment.

In a world of broad sensory, language, cognitive, and motor experiences and nurturing, supportive caregivers, the brain will prepare itself to learn and succeed in a range of situations.

If the child suffers danger and injury and is exposed to few sensory experiences beyond television, the brain may wire itself to ignore learning opportunities but react to any threat or negative response with violence.

Each child needs our help to develop fully and successfully—to fit into a family and our society.

Ability to Compensate

The brain can compensate for many injuries or lack of stimulation, especially during the first 10 years of life. With therapy or the right opportunities, the brain can develop skills and find alternative ways to accomplish processes. There may be no gain in academic performance or IQ with interventions after age five, but motor skills and behavior can change.

What You Can Do

Start Before the Baby Is Born

Seek prenatal care.
Eat nutritious meals.
Buy an infant seat that fits your car.

Keep Your Baby Healthy

Take your baby to regular doctor checkups.
Follow the immunization schedule.
Breast-feed if possible.
Baby-proof your home. (Use the Kiwanis home safety checklist.)

Respond to Your Baby

React to his moods.
Try to understand what she feels and tells you.
Participate in play when he wants you to.
Help her feel safe and secure.
Show that you care.

Provide Input

Talk about what you're doing and what the baby is doing.
Sing and play music.
Tell stories and read books—ask questions about the story.
Stock up on crayons, paper, and other art supplies.
Provide toys for building, role-playing, and little people play.

Encourage Exploration

Allow your child to explore outside areas.
Let her run, jump, and scream.
Arrange for playmates of various ages.
Help playmates resolve conflicts.

Provide Guidance

Encourage your child to express his feelings.
Explain what you want her to do (not just what she shouldn't do).
Describe the rules you set and consequences of behavior.
Point out how his behavior affects others.
Make it clear that you love her even when you dislike her behavior.

Control the Environment

Create routines for standard activities, such as mealtime and bedtime.
Do things in a predictable way.
Limit television and help choose shows.

Involve Yourself in Child Care and Preschool

Talk to the provider regularly.
Learn what is happening in class.
Attend class with your child.

Remember Your Child Is Unique

Remember that every child develops at her own speed and manner.
Accept that every child has his own personality.
Know that your child will succeed.

YOUNG CHILDREN: PRIORITY ONE ORDER FORM

Use this form to order any materials you need for developing a project that addresses needs of young children.
Limit of five each.

Service Bulletins

Detailed instructions for implementing service projects

Information items

Materials helpful for developing any service project.

Quantity	Title
_____	Reading Is Fundamental (PO#1)
_____	Head Start (PO #2)
_____	Burns (PO#3)
_____	Smoking Awareness Campaign (PO#4)
_____	Parenting Fair (PO#5)
_____	Children's Miracle Network (PO#6)
_____	Smoke Detector Safety (PO#7)
_____	Pediatric Trauma (PO#8)
_____	Home Safety Checklist (PO#9)
_____	Prevention of Child Abuse (PO#10)
_____	Shaken Baby Syndrome (PO#11)
_____	Parents Anonymous (PO#12)
_____	Parenting Education (PO#13)
_____	Immunizations (PO#14)
_____	Alcohol Awareness (PO#15)
_____	Preventing Lead Poisoning (PO#16)
_____	Home Visitation Programs (PO#17)
_____	Playgrounds (PO#18)
_____	Playday (PO#19)
_____	Child Care (PO#20)
_____	Intergenerational Projects (PO#21)
_____	Advocacy through Field Trips (PO#22)
_____	Brain Development (PO#25)
_____	Kiwanis Hospital Dolls (PO#26)

Quantity	Item
_____	Complete kit—all seven listed and four service bulletins
_____	Project Idea List (PO#24)
_____	Fact Brochures—in sets of 50, limit 2 sets
_____	Needs Survey Book (PO#23)
_____	Nomination Form for Outstanding Club Project
_____	Young Children: Priority One District Chairman list
_____	Priority One Advisory Council Members

SHIP TO:

Name _____

Address _____

Kiwanis Club _____

Phone/E-mail _____

SEND THIS ORDER TO: Service Programs Department
 Kiwanis International
 3636 Woodview Trace
 Indianapolis, IN 46268
 Fax: 317-879-0204

These items are also available on-line at www.kiwanis.org .



**Service Programs Department
Kiwanis International
3636 Woodview Trace
Indianapolis, IN 46268-3196 USA
www.kiwanis.org
service@kiwanis.org
(317) 875-8755, ext. 211 Worldwide
1-800-549-2647 North America
(317) 879-2024 Fax**