Minnesota Learning Resource Center

A Program of A Chance To Grow
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**MLRC Mission Statement**

To train and assist educators in the replication of brain stimulating methods and interventions designed by A Chance To Grow, and through that process, to establish a community of educators who view and understand children developmentally.

**Profile**

The Minnesota Learning Resource Center (MLRC) is the teacher-training institute of A Chance To Grow (ACTG), a nonprofit agency that helps children with learning challenges, developmental delays, and brain injuries reach their highest potential. Established in 1999, the MLRC received state legislative funding for the replication of ACTG’s most popular intervention, S.M.A.R.T., and two other programs, JIAS and Neurotechnology (see descriptions below). The institute’s team of professionals, who have years of experience as former teachers, occupational and vision therapists, reading specialists, and administrators, provide workshops and on-site mentoring to educators across the state and nation. All of the interventions are designed to increase an educator’s understanding of child neurophysiological development and provide tools to enhance a young student’s learning readiness skills.

**Programs**

- **S.M.A.R.T.** (Stimulating Maturity through Accelerated Readiness Training): integrates fun and challenging physical activities into the classroom that are designed to prepare the brain for reading and learning in a way that traditional instruction does not. Compatible with any existing curriculum, the multi-sensory activities stimulate the brain and increase its capacity to learn. Students who have developed mature readiness skills through S.M.A.R.T. have shown an increased attention span, ability to focus and improved reading scores.

- **S.M.A.R.T. Pre-K** S.M.A.R.T. Pre-K is a program that develops and enhances the physiological readiness skills that children need in order to be ready for and to succeed in school. Through the use of a multi-sensory approach to learning, SMART Pre-K applies principles of instruction to any curriculum area by providing purposeful and age-appropriate physical activities that are both brain-stimulating and fun for the child.

- **JIAS** (Johansen Individualized Auditory Stimulation): uses individually formatted CDs to enhance auditory processing skills in children who struggle with phonemic awareness and the perception and retention of auditory information.

- **Neurotechnology** Audio Visual Entrainment (AVE) and Electro Encephalographic (EEG) Neurofeedback are technologies that help children
with academic, emotional and behavioral issues learn to relax and focus by training their brain to work more efficiently at certain brainwave frequencies.

**Key Facts**

- 4,700+ teachers nationwide have been trained in S.M.A.R.T.
- 60,000 children have benefited from S.M.A.R.T.
- 250 schools trained throughout Minnesota and nationwide
- 2/3 of S.M.A.R.T. kindergartners score above the national mean for reading readiness (according to the national Metropolitan Readiness Test 6, Level 2)

**History and Studies**

**Background**

Bob and Kathy DeBoer founded A Chance To Grow (ACTG) in 1983 to share the effective therapies that helped their brain-injured daughter overcome extraordinary challenges. Located in northeast Minneapolis, ACTG is a nonprofit agency committed to the natural development of the whole child through educational, rehabilitative and therapeutic programs and services. Today, ACTG has evolved into a professionally staffed educational and health care organization that helps all children, particularly those from disadvantaged backgrounds, prepare to learn and reach their highest potential.

The success of ACTG’s most popular intervention, S.M.A.R.T., led to the founding of the Minnesota Learning Resource Center (MLRC) in July of 1999. Funding was approved by the state legislature to establish it as the agency’s teacher-training institute that hosts workshops and mentors educators in all of ACTG’s interventions that extend across the state and nation. The MLRC’s mission is to provide training and assistance to educators in the replication of brain stimulating methods and interventions designed by ACTG, and through that process, to establish a community of educators who view and understand children developmentally. This is accomplished through the institute’s team of professionals who train teachers in the educational workshops and then provide follow-up, on-site mentoring, typically over a three-year period.

**Simple, Affordable and Replicable Learning Interventions**

A Chance To Grow’s early work with learning disabled and brain-injured children led to the discovery of learning interventions that could help all children do better in school and in life. The Minnesota Learning Resource Center promotes the use of these state-of-the-art brain development tools to maximize the potential of every child in school. The interventions are:
Stimulating Maturity through Accelerated Readiness Training (S.M.A.R.T.) - S.M.A.R.T. is the centerpiece program for schools that implement ACTG/MLRC interventions. It includes a variety of fun movement activities that stimulate the brain and enhance its ability to learn. Designed to help children at all stages of development, S.M.A.R.T. activities exercise the brain in a way that traditional classroom instruction does not. It focuses stimulation on the brain stem, which controls automatic functions, such as balance, coordination, vision, and fine motor abilities that are crucial to reading and learning. Without these readiness skills, a child is often unable to apply required auditory and vision skills, is easily distracted in class and struggles to focus his or her attention on academic material. To help students gain these skills, S.M.A.R.T. teachers set up obstacle courses and activity stations to stimulate their tactile, auditory and visual pathways. Most of the stations include floor mats, rebounders, overhead ladders, balance beams and spinning games. The students rotate every three-five minutes and complete about eight-ten laps. S.M.A.R.T. activities are done for 30 minutes each day and are designed to take place in the classroom, gym or playground. They are compatible with any existing academic curriculum and are a fun, exciting way to stay active and enhance learning.

- S.M.A.R.T. Pre-K - SMART Pre-K is a program that develops and enhances the physiological readiness skills that children need in order to be ready for and to succeed in school. Through the use of a multi-sensory approach to learning, SMART Pre-K applies principles of instruction to any curriculum area by providing purposeful and age-appropriate physical activities that are both brain-stimulating and fun for the child.

Johansen Individualized Auditory Stimulation (JIAS) - Many children with learning challenges have trouble processing sound. Students participating in JIAS listen to music CDs, which are based on their individual audiogram and have been specifically formatted to stimulate their specific under-developed auditory skills for 20 minutes a day. JIAS leads to improved auditory processing skills that allow the student to engage more easily in the classroom environment. This leads to improvements in basic reading de-coding skills and reading development.

Neurotechnology - Neurotechnology techniques are used to help children with attention issues, hyperactivity and other learning and behavioral challenges and to achieve a calm and focused state, which is optimum for absorbing and processing information. MLRC offers training in two technologies, Audio Visual Entrainment (AVE) and EEG (Electro Encephalographic) Neurofeedback. Children using these interventions demonstrate significant improvement after completing 30-40 sessions, with some children able to avoid, reduce, or eliminate medication for hyperactivity, inattention and anxiety.

MLRC Training & Program Implementation across the State & Nation
S.M.A.R.T. Teachers Get S.M.A.R.T.

Each year, the MLRC trains teachers from schools across the state and country. Throughout the school year and summer months, teams of educators attend S.M.A.R.T. and S.M.A.R.T. Pre-K three-day workshops, either in Minneapolis or at various locations around the country. At the workshop, they learn MLRC interventions and specific activities that, done over a given period of time, prepare children to learn. To date, more than 4700 teachers have been trained by the MLRC, involving over 250 schools and more than 60,000 students across 13 states.

On-site staff development and mentoring is one of the unique characteristics of the S.M.A.R.T. program. The MLRC provides follow-up, on-site services after the workshop for up to three years.

As classroom teachers, physical educators, principals, reading specialists, and vision and occupational therapists, the MLRC mentors are all experienced professionals with strong backgrounds in education. Working with developmental optometrists and specialists in brain development, the team has created the S.M.A.R.T. workshop and designed the S.M.A.R.T. Curriculum Guide and S.M.A.R.T. Pre-K More and Core program guides that serve as handbooks, detailing all of the program activities. These MLRC professionals provide mentoring services that include:

- Consulting and observation of individual programs
- Meeting regularly with each school’s team of S.M.A.R.T. educators and administrators
- Providing recommendations to keep the program exciting and moving forward
- Addressing parent and community groups about the S.M.A.R.T. program
- Gathering data to confirm that the program is on track for expected gains

S.M.A.R.T. K-3 Data

Test scores and analysis have shown that students benefit greatly from the S.M.A.R.T. program.

The MLRC uses a number of nationally normed measures to capture data, including the Metropolitan Readiness Test 6, Level 2 at the Kindergarten level. The MRT6 is a widely recognized, nationally standardized, scripted test of readiness for reading and early math levels.

The MRT6 supplies four global scores in the areas of Beginning Reading Skill, Story Comprehension, Pre-Reading Composite (combining Reading Skill and Comprehension scores) and Quantitative Concepts.
Another reading measure selected for use with first and second grade S.M.A.R.T. students is word identification on the nationally standardized and normed Slosson Oral Reading Test (SORT-R3) wordlist. The SORT-R3 provides an indication of the visual recognition language ability rather than decoding through phonemic/phonetic analysis.

These measures were used to collect data on S.M.A.R.T. Kindergarten, first, and second grade classrooms in Minnesota (see below). Other MLRC national data and reports are available online at actg.org/programs-services/mlrc/data

**Kindergarten** - Metropolitan Readiness Test 6, Level 2 (MRT) shows that two of every three S.M.A.R.T. Kindergarten students scored above the national mean for reading readiness.

The MRT’s Pre-Reading Composite is a combination of scores from Beginning Reading Skills and Story Comprehension. When testing 412 Minnesota Kindergartners from 18 classrooms, the scores from the Pre-Reading Composite distribution shown in the graph below reveal:

- Only 9% of kids scored in the lowest quartile in reading readiness versus the expected 25%
- 72% scored above the national mean versus the expected 50%
- 91% scored in the average range or superior
- 31% scored at the superior level

The 9% of students who ranked in the lowest quartile are expected to improve to normal levels with a second year of S.M.A.R.T. stimulation. The program produces high-level results in 1st grade reading readiness among regular students, including those who are at-risk of academic difficulties, such as economically disadvantaged and racial/ethnic minorities.
In addition, the MRT scores of the 412 S.M.A.R.T. Kindergarten students tested in Quantitative Concepts display the high proportions and levels of readiness predicting success in primary-grade mathematics curriculum:

- 85% scored at normal levels or higher
- 61% scored above the national mean
- 31% scored in the highest quartile

Distribution on the graph below shows that these regular S.M.A.R.T. Kindergarteners are performing at expected levels of maturity compared to national norms. These
students are predicted to make steady progress in primary-grade mathematics curricula.

First and Second Grade - The reading measure selected for use with first and second grade S.M.A.R.T. students is word identification on the nationally standardized Slosson Oral Reading Test (SORT-R3) wordlist. At the end of first grade, the median class is expected to read at grade level 2.0. When testing 403 Minnesota students from 21 classrooms, graph scores below reveal a half-year advantage to the median S.M.A.R.T. first graders who scored at 2.5 grade levels.
And, when testing 271 second grade students involving 17 classrooms, the advantage for the median S.M.A.R.T. class increased even more to 3.8 reading level compared to the expected 3.0 at the end of two years of reading instruction.

Over two years of S.M.A.R.T. stimulation, the teachers of the median classes were able to boost the acquisition and retention of word recognition by almost one year before entering third grade. Half of the S.M.A.R.T. classes achieved at higher levels than the median class.
The work of the MLRC has spread across Minnesota and the nation. It has caught the attention of funders and community and national leaders. In addition to the initial and continued state legislative backing for a number of years, financial support from the U.S. Department of Education and a number of state and regional foundations, the MLRC has completed a five-year study involving 22 Head Start sites in creating a S.M.A.R.T. – Early Childhood program, to address the needs of those educators and children aged three to five. The MLRC is preparing to launch this program statewide. The MLRC is also currently working in partnership with the Greater Twin Cities United Way. The joint mission is aimed at increasing reading skills.
amongst children in grades K-3 from families of low income within the nine-county Minneapolis-St. Paul metropolitan area. Through the United Way partnership, the MLRC is working with nine elementary schools to train and mentor their staff over a three-year period. In addition, a newly designed specific training and mentoring model has been designed through the partnership for Title I and other educators working with small groups of children that will enable them to address the needs of children who struggle the most.

S.M.A.R.T. Pre-K Data

Recognizing that it made sense to prepare children to learn prior to entering school rather than attempt to remediate once in school, ACTG looked at how to adapt its S.M.A.R.T. program to the pre-K set, taking advantage of the fast developing brain and applying purposeful but normal and age-appropriate physical movement to stimulate the brain. ACTG partnered with two Head Start programs involving 20+ sites at ACCAP Head Start in the metro counties of Anoka and Washington and M.A.H.U.B.E. Head Start near the White Earth Indian Reservation in rural Minnesota, covering Mahnomen, Hubbard and Becker counties.

During the course of the five-year study, ACTG maintained an on-going feedback system from participating teachers and Head Start staff. This systematic approach included the following steps: (1) Using research and practitioner knowledge to design interventions; (2) Working closely with teachers to get their perspective on needs, failures, and successes and then using this input to design new approaches and to provide anecdotal information on what works; (3) Trying out ideas and techniques in field settings and using practitioners to help with improvements and modifications; (4) Field testing of the methods; (5) Systematic evaluation/testing of the interventions; (6) Dissemination of findings. From this study and ongoing relationship with the Head Start Centers, we developed a field-tested SMART program that includes a three day training, follow-up, onsite mentoring model, two published guides, SMART Pre-K CORE and SMART Pre-K MORE with two additional program guides in the works.

The results of the five-year study showed:

Years Two through Four were demonstration years and involved the testing of the S.M.A.R.T. intervention using two standard tests of early literacy skills and school readiness – IGD1 (Individual Growth and Development Indicators) and Brigance K & 1 Screen II (a test of various aspects of school readiness).

- **Year Two**: Test score analysis in Year Two was confined to Head Start centers in the northwestern Minnesota sites, since the metropolitan site was still in its first year of implementation. In this site, Head Start students in S.M.A.R.T. – E.C. classrooms scored higher than students in comparison classrooms – picture
naming (some inconsistency), rhyming, alliteration, and school readiness. Teacher acceptance of the new tool continued to increase.

• **Year Three:** The third year testing results were mixed and somewhat contradictory and unable to support the hypothesis of greater performance among S.M.A.R.T. – E.C. students. In probing for a deeper understanding, we examined performance gains for just students in full-day, full-year Head Start centers (assuming a longer and more intensive intervention). Over the course of the year, S.M.A.R.T. – E.C. students performed increasingly better in rhyming and alliteration and the same on picture naming (a less demanding test). However, teacher acceptance and evaluation of S.M.A.R.T. – E.C. continued to increase.

• **Year Four:** By the fourth year, a clear pattern had emerged – Head Start children who received S.M.A.R.T. – E.C. performed better on a variety of tests of early literacy and school readiness than Head Start children who did not receive it. Head Start children who received it performed better on a majority of learning readiness and early literacy tests.
  
  ▪ In six out of eight comparisons of classrooms at both sites, S.M.A.R.T.- E.C. end-of-the-year IGDI test scores were higher than those of comparison classrooms.
  
  ▪ In 5 out of 6 comparisons of Fall to Spring improvement scores on IGDI, S.M.A.R.T. – E.C. children performed better than children in comparison classrooms.
  
  ▪ S.M.A.R.T. – E.C. children’s scores for both IGDI and Brigance tests at both sites compared favorably to norms established for five-year olds (a measure of school readiness).

Teacher acceptance and enthusiasm for S.M.A.R.T. – E.C. was strong. By the third and fourth years of the demonstration teachers were, by and large, quite enthusiastic about its value and contribution to learning readiness. In fact, teacher praise for S.M.A.R.T. – E.C. was very strong. According to teachers, students in S.M.A.R.T. – E.C. classrooms learned skills faster, focused and concentrated better, and learned letters and shapes faster. Teacher comfort with S.M.A.R.T. – E.C. did not become really strong until a long period of trial and error – usually by the end of the second year. By the end of the final year, Head Start teachers at both sites continued to use S.M.A.R.T. - E.C, even though the initial financial support had expired. In addition, S.M.A.R.T. – E.C. has been introduced into other centers that originally served as comparison classrooms.
Following Head Start/S.M.A.R.T. – E.C. Students into Elementary School

Year Five was a follow-up year. By Year Four of the demonstration project, ACTG was ready to follow a subsample of Head Start graduates who had received S.M.A.R.T. – E.C. into elementary school to assess their readiness for school and their early academic skill development. Because of resource and tracking limitations, this follow-up study looked at a smaller sample (N=45) of Head Start/S.M.A.R.T. – E.C. students in elementary school. The follow-up study produced even more positive results:

**Year Five: Tracking Head Start Students into Elementary School**

In Year Five (2009-2010), 45 children who received S.M.A.R.T.- E. C. were tracked as they entered elementary school to see how well they performed relative to their classmates and national norms.

**Year Five results provide solid evidence that:**

- **Head Start/S.M.A.R.T. – E.C. students were ready to learn upon entering Kindergarten.**

  Tests of letter naming and sound fluency showed that Head Start/S.M.A.R.T. – E.C. students entered kindergarten scoring very close to the national norms for these tests. These results are encouraging in light of research in Minnesota showing that high percentages of children from low income families enter Kindergarten not proficient in language, literacy, and mathematical thinking and significantly higher than higher-income children to be rated not proficient.

- **Head Start/S.M.A.R.T. – E.C. students continued to learn at levels expected of all students in subsequent grades.**

  We examined performance of Head Start/S.M.A.R.T. – E.C. students at the end of each of three elementary grades – Kindergarten, First Grade, and Second Grade – and compared them with national norms. At all three grade levels, the Head Start/S.M.A.R.T. – E.C. students met or exceeded normative expectations. These are impressive results for low-income students.

- **There was no evidence of the Head Start fade – performances at the normative level of Head Start/S.M.A.R.T. – E.C. continued through Grade Two.**
There is always a fear that performance gains in Head Start will fade over time in elementary school. There was no evidence of this in this study. We measured growth scores in reading and math in Grades One and Two and found that Head Start/S.M.A.R.T. – E.C. students improved at the same rate as other students in these grades and at the level of national norms.

Summary
ACTG now has evaluation evidence from five years of a demonstration program of S.M.A.R.T. – E.C. that supports its effectiveness as an early education intervention. Just about everybody with an interest in education deplores existing and persistent achievement gaps between students of varying income levels and racial backgrounds. Yet, little goes beyond describing and deploring the gap. The results of this study suggest that brain-related interventions, especially at an early age, might reduce these nagging inequalities – by elementary school, the Head Start students who received S.M.A.R.T. – E.C. were performing at a level equal to the other elementary school students.

Over the five years, ACTG was able to demonstrate that:

✦ The S.M.A.R.T. curriculum can be adapted to a preschool setting;

✦ Teachers can learn, accept, and support this new tool;

✦ Head Start children receiving S.M.A.R.T. – E.C. generally perform better on tests of early literacy skills and school readiness measures than those who do not receive it;

✦ Head Start children who received S.M.A.R.T. – E.C. entered kindergarten ready to learn and at a level equal to national norms;

✦ As Head Start/S.M.A.R.T. – E.C. students progressed through K-2 grades, they continued to learn at levels expected of all students;

✦ There was no evidence of a “fade” in later grades – the Head Start/S.M.A.R.T. – E.C. students continued to perform at the normative level through Second Grade.
S.M.A.R.T. Benefits

S.M.A.R.T. is a fun, exciting way for children to get moving in the classroom and enhance the learning readiness skills that are crucial to academic success. The program emphasizes stimulation of the brain, specifically the brain stem, to accelerate development and enrich learning. The activities, which are easy and convenient, fit into any academic curriculum and involve inexpensive materials that most schools and childcare centers already own. Children who develop mature readiness skills through S.M.A.R.T. have shown an increased attention span, ability to focus and improved reading scores.

Activities:

• **Balance Beams** – used in classrooms and on playgrounds. **Primary purpose:** to encourage balance and body awareness. When a child walks slowly across a balance beam, his/her body is developing balance and learning where it is in space. **Classroom relevance:** body awareness helps children sit still and remain seated in their chairs. It also helps them understand the directions left and right, which is a skill that’s needed for reading. Children who have problems with body awareness may fall out of their chairs, have a short attention span, read from right to left, or reverse letters and words.

• **Rebounders** – similar to trampolines. **Primary purpose:** to encourage development of the proprioceptive system. When a child jumps on a rebounder, the muscles, joints, ligaments, bones, and tendons in the body are stimulated. This helps the child learn the orientation of body parts and movements. **Classroom relevance:** a matured proprioceptive system is necessary for a child to perform in the classroom. This skill teaches the child’s body how much muscle tension is needed to sit in a chair properly and how to grade muscle movement appropriately. Children who have problems with proprioception may sit in a chair with poor posture and may respond to touch with too much or too little force.

• **Overhead Ladder** – similar to monkey bars. **Primary purpose:** to encourage eye teaming. When a child is moving across the bars, he/she must look at, and grasp, the rungs one by one. In doing so, the child’s eyes must work as a team to fuse together one image for the brain to interpret. If the eyes lack this ability, the child struggles to get across. **Classroom relevance:** eye teaming is an extremely important skill for reading. The eyes must be able to work as a team and fuse two images into one, otherwise the child will see double. Kids who have difficulty with eye teaming usually fatigue easily, struggle with reading comprehension, and may lose the motivation to learn.
• **Spinning** – known as helicopter spins. **Primary purpose:** to encourage body awareness. When a child is spinning, the fluid in the inner ear moves around and sends signals to the brain about where the child’s body is in space. This stimulates the brain in a way that’s similar to popular impulse control medications. It quickly produces a calmer, more focused student. **Classroom relevance:** as previously mentioned, body awareness helps children sit still and remain seated in their chairs. It also helps them understand the directions left and right, which is a skill that’s needed for reading. Children who have problems with body awareness may fall out of their chairs, have a short attention span, read from right to left, or reverse letters and words.

• **Crawling/Creeping** – **Primary purpose:** to integrate retained primitive reflexes and develop eye muscles. Primitive reflexes and weak eyes will restrict a child’s movements and his/her ability to learn material. **Classroom relevance:** students must have strong vision skills and integrated reflexes in order to focus on academic material in the classroom. Crawling and creeping activities provide the stress and stimulation that matures these skills. Kids who have not fully developed these abilities will have difficulty sitting still in class, focusing on material, become upset, and struggle with reading and writing.

• **Vision Activities** – include eye movements, focusing, teaming, and perception. **Primary purpose:** to strengthen the eyes as a tool for reading and learning. Years of research shows that approximately 80% of learning comes through the visual pathways. A child’s eyes must be matured for him/her to reach full potential. **Classroom relevance:** children need fully functioning vision to read. Vision must become an automatic task in order for the brain to focus on reading comprehension. Students who do not develop strong vision will not be able to recall the material that he/she read. They will tire easily, become frustrated, and quickly begin to dislike school and learning.

• **Auditory Activities** – include phonemic awareness, sound blending, and auditory discrimination. **Primary purpose:** to encourage auditory skills vital to reading. When children are exposed to S.M.A.R.T. auditory activities, they hear many repetitions of same, different, and similar sounds and blends in a game-like fashion. The auditory system stores that information in the language area of the brain for when they learn to read. **Classroom relevance:** the ability to recognize, discriminate, and blend sounds and words is crucial to reading. The child must have the ability to recognize sounds before matching sounds to letters. He/she must also have the ability to discriminate between similar sounds, especially vowel sounds, put sounds together, and finally, start learning to read. Children who have difficulty with these auditory skills struggle to follow directions, complete their work, stay quiet during class, and may lose motivation to learn.
Skills:

- **Eye-hand Coordination** – also known as visual motor integration. **Primary purpose:** to integrate vision with the motor system to reproduce complex patterns, such as handwriting. Eye-hand coordination activities include games involving beanbags, balls, paper, and chalk/whiteboards. **Classroom relevance:** eye-hand coordination is the motor component for learning language. Children who have problems with eye-hand coordination will have difficulty with handwriting, drawing, cutting, and other fine motor tasks.

- **Visual Acuity** – also known as clarity of sight. **Primary purpose:** to enhance visual clarity. Many S.M.A.R.T. visual activities involve the focusing and relaxing of eye muscles and lenses. This enables the child to see in the distance, and at near point, more clearly and quickly adjust focus between the two. **Classroom relevance:** visual acuity is extremely important for academic success. A child must be able to see clearly without getting fatigued and have the ability to shift focus between the chalk/whiteboard and his/her desk. Children who have problems with visual acuity may squint, blink, or rub their eyes, complain of headaches and fatigue, take longer than necessary to complete assignments, or avoid academics altogether.

- **Functional Vision** – the ability of the eyes to communicate with the brain. **Primary purpose:** to make the eyes a more proficient tool for learning. Characteristics of perfect vision include acuity, stereopsis (depth perception), fusion, phoria (eye coordination), color perception, and lateral coordination. **Classroom relevance:** considering that about 80% of learning comes through the visual pathways, even the slightest vision impairment can hurt a child’s ability to read and learn. S.M.A.R.T. activities work to strengthen the muscles of the eye and, if done regularly, correct a student’s vision. Kids who have difficulty with functional vision may squint, blink, or rub their eyes, complain of headaches and fatigue, take longer than necessary to complete assignments, or act out and give up.

- **Fine Motor Skills** – also known as pre-writing skills. **Primary purpose:** to develop small muscles in the hands and fingers in preparation for holding writing tools. Fine motor skills are enhanced and developed as a child works with his/her hands to manipulate small objects. In addition, sensory stimulation in the hands through other activities, such as creeping and crawling, also helps lay the foundation for mature fine motor skills. **Classroom relevance:** fine motor skills are a prerequisite for writing. The child must be able to hold a pencil properly, in the right position and with the right amount of tension, in order to write. Students who struggle with fine motor skills often have poor handwriting, drawing, cutting, and other fine motor tasks.
• **Spatial Relations** – include bilateral coordination, left-right awareness, and directionality. **Primary purpose:** to develop spatial relation skills that allow the child to interact with, and organize, his or her environment. This allows the child to understand left and right, up and down, front and back, and make judgments about the location of objects. **Classroom relevance:** Spatial relations are essential to reading and writing. Both skills require a child’s knowledge of left and right, which must be understood within the child before he/she can project it onto an inanimate object, like a book or worksheet. Kids who have problems with spatial relations may confuse or reverse similar letters and words, misalign digits, and easily become frustrated.

• **Primitive Reflexes** – **Primary purpose:** to integrate retained primitive reflexes, which hinder a child’s ability to sit comfortably in a desk and learn to read and write without restricted movements. In normal development, reflexes should be integrated by age one; however, with S.M.A.R.T., only two minutes of activities per day throughout the school year will cure the issue. **Classroom relevance:** retained primitive reflexes can influence how the child holds a pencil and whether or not he/she has the ability to sit in a chair. Children with retained primitive reflexes can display a range of struggles in the classroom, such as using too much pressure when writing (causing the pencil’s lead to break), holding material off to one side when reading or writing, sitting with legs straight and arms bent (or legs bent and arms straight), and hyperactivity.

**Get S.M.A.R.T.!**

*S.M.A.R.T. is a curriculum of the Minnesota Learning Resource Center (MLRC), the teacher-training institute of A Chance To Grow, a nonprofit agency that helps children with learning challenges, developmental delays, and brain injuries reach their highest potential.*

S.M.A.R.T. is based on the principle that movement anchors learning. In a world dominated by television, computers, and video games, children are spending more time sitting down, indoors, and staring at video screens than ever before. At the same time, more children are being diagnosed with learning disorders and developmental delays. The best way to help these kids is to get them moving! Children who develop learning readiness skills through S.M.A.R.T. movement activities have shown an increased attention span, ability to focus, and improved reading scores!
Children who are physically active in their early years have a significantly greater chance of achieving success in school. This is because movement provides multi-sensory stimulation, which exercises the brain and prepares it for learning and reading in a way that traditional classroom instruction does not. Many students who struggle with reading have difficulties with comprehension. The reason is, their brain cortex, which controls conscious motor activity and higher levels of functioning (such as comprehension), is working overtime to carry out responsibilities that the brain stem, which regulates unconscious motor activity, has not been trained to handle yet (see image below).

In order for the cortex to process material, the brain stem must be able to perform its own tasks, such as move the eyes from left to right across a page, adjust visual focus between the desk and board, and sound out letters to form words. This is a common issue with reading that often goes undiagnosed in children from all backgrounds. Professional therapists and educators specifically designed S.M.A.R.T.

In addition to developing visual and auditory skills for reading, S.M.A.R.T. activities also enhance body awareness, eye-hand coordination, fine motor abilities, and integrate primitive reflexes. Students who do not possess these readiness skills often have difficulty sitting still and paying attention in class. They get distracted easily and as a result, struggle with academics or behavior. S.M.A.R.T. is designed to get these students back on track with readiness skills and be reading at grade level by third grade (when the focus shifts from learning to read to reading to learn). The
program transforms the classroom into a playful atmosphere, helps children stay healthy, and allows them to reach their full potential!

**Hey Educators…**

S.M.A.R.T. is compatible with any curriculum! It helps all children—those who struggle, and those already at grade level—develop naturally in their early years. The program integrates fun and challenging activities into the classroom that increase the brain’s learning capacity and prepare it for reading. Schools that used S.M.A.R.T. in the past have successfully helped children advance, and in the process, saved money through less referrals for costly Title I and Special Education services. The MLRC hosts most of its educational workshops in the summer, and offers on-site mentoring to S.M.A.R.T. educators all year round!

**More about the MLRC…**

- S.M.A.R.T. evolved out of a program originally established by the founders of A Chance To Grow in 1982.
- The Minnesota Learning Resource Center (MLRC), established in 1999 through state legislative funding, hosts S.M.A.R.T. workshops and provides on-site mentoring across the state and nation.
- There are currently over 4,000 S.M.A.R.T. teachers trained in over 250 schools throughout Minnesota and nationwide.

**Research to consider…**

- In *Preventing Reading Difficulties in Young Children*, the National Research Council concludes that a student’s reading ability at the end of third grade strongly correlates with future academic success.
- The *National Assessment of Educational Progress*, conducted in 2009 by the National Center for Education Statistics, reports that 68% of the nation’s fourth graders do not read at a level of proficiency.
• In *Cognitive Neuroscience: The Biology of the Mind*, psychologists Gazzaniga, Ivry, and Mangun stress that 80% of learning comes through the visual pathways.

• The American Optometric Association reports “60 percent of children identified as ‘problem learners’ actually suffer from undetected vision problems and in some cases have been inaccurately diagnosed with attention-deficit disorder or attention-deficit hyperactivity disorder.”

• McKinsey & Company’s *The Economic Impact of the Achievement Gap in America’s Schools*, shows the declining quality of American schools hurts the economy and if achievement gaps were closed, the yearly gross domestic product would be trillions of dollars higher.

*For more information about the MLRC, please email mlrc@actg.org, call 612-706-5549, or visit [http://www.themlrc.org](http://www.themlrc.org)*

*For more information about S.M.A.R.T. Workshops, please visit [http://www.themlrc.org/workshops/workshops_schedule_smart.htm](http://www.themlrc.org/workshops/workshops_schedule_smart.htm)*