

**High Early Literacy with Neuro-Developmental Readiness:  
The SMART\* Program in Huron, SD Regular Title 1 Schools**  
\*(Stimulating Maturity through Accelerated Readiness Training)

A Preliminary Report

Huron Public Schools, Huron, South Dakota, May, 2004

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**Abstract**

Results are reported for a neuro-stimulation program of K-2 foundational skills with regular students in Title 1 schools and low SES students receiving more than one year of the SMART program (Stimulating Maturity through Accelerated Readiness Training). SMART provides the master teacher an opportunity to teach more because attention, acquisition, retention and production abilities are increased. September and May word identification using the Developmental Reading Assessment (DRA), Wepman Auditory Discrimination Test for phoneme differentiation, kindergarten printing and DRA oral text accuracy fluency and reading levels are reported. In all measures, high medians of class medians and high proportions of students at average range or higher were found. Class medians indicated students were reading about a half-year advanced at each grade level on the DRA.

Proportions of 97 SMART kindergarteners were: 78% reading 10+ high frequency words (median 17 words), 97% scored normally in auditory discrimination (median 95<sup>th</sup> percentile) and 89% printed with mid first-grade quality. For 37 first graders, 100% read all 39 DRA sight words, 76% scored normally in auditory discrimination (median 52<sup>nd</sup> percentile) and 71% scored above DRA level 18 (beginning 2<sup>nd</sup> grade) with 98% accuracy fluency. Proportions of 48 second graders indicated 81% had normal auditory discrimination (median 62<sup>nd</sup> percentile) and 75% of students read above DRA level 28 (Median 34+) with 95+% accuracy fluency. Disaggregated student group analysis will be contained in a future comprehensive report.

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## The SMART Program in Huron, SD

The third year of the SMART program (Stimulating Maturity through Accelerated Readiness Training) was completed in May of 2004. Results for the 2002-2003 year are also available for comparison (see References).

The SMART program (Stimulating Maturity through Accelerated Readiness Training) applies brain stimulation techniques integrated into regular kindergarten curriculum in classroom, floor and playground areas in order to produce high levels of physiological readiness for early academic success in the primary grades. SMART gives the master teacher the opportunity to teach more because attention, acquisition, retention and production abilities are increased. The philosophy of SMART is that success or failure begins early and a strong program of readiness stimulation can boost substantial increases in the proportions of children who are ready to respond favorably to academic instruction in the foundational primary grades. The booster effect of SMART increases the effectiveness of whatever curriculum the teacher chooses to present enthusiastically and expertly. SMART is currently used successfully in more than 270 kindergarten classrooms nationwide.

The SMART program provides a 3-4 day staff development seminar for readiness teams consisting of the classroom teachers, an administrator, physical education teacher and any other teachers/ persons with a strong interest in providing a foundation for academic basic skills. A key component of the program is that the staff must meet regularly as a team, led by a supportive principal/administrator. The administrator is expected to attend the training along with the staff. Students participate in combined stimulation/academic activities in a fun mastery context that produce early bonding with school and pride in proficiency and mastery.

A brief overview of the program activities is available (See references) and an extensive presentation is given in the SMART/Boost-Up Workshop Manual and the SMART/Boost-Up Curriculum Guide available from the Minnesota Learning Resource Center in Minneapolis. In brief, students are given 30 minutes of neuro-physical stimulation daily in floor and playground locations, plus pre-academic and early academic modeling stimulation integrated into regular classroom curriculum in a warm classroom emotional climate. Pupils with problems are usually evident early in the program, fulfilling the objective of early identification of students at risk for learning failure and provision of early remedial intervention services.

The recent Minnesota legislative *2000-2001 Summary Report* presented results for SMART in grades K-2 for pilot project schools in Minnesota showing substantially higher levels of visual and auditory/listening readiness as well as high levels of reading, spelling and math skills (Minnesota Learning Resource Center, 2002). Two-to-three years of systematic SMART stimulation is expected to produce markedly higher levels of achievement than are expected without the program. In addition to the previous physiologic measures of readiness, the research team became interested in results from a nationally-standardized test of first-grade readiness. Use of the MRT6 in northwestern

Wisconsin schools provided evidence of high readiness levels in SMART classes in comparison to control classes at the end of the 2002 school year. All comparisons of proportions by quartiles were statistically significant using chi-square tests of independence. (Palmer, 2000). Similar results were obtained in Huron Public School kindergartens in 2003.

## **Kindergarten Early Literacy Readiness in Huron Title 1 Schools**

Data from students age 5 on or before September 1 were analyzed, including 97 students from 7 SMART classes in 5 schools (2 Title 1 schools), 43 students receiving meal assistance (44.3%), 3 English Language Learners and 10 racial minority students. Students excluded were 9 Redshirts (age 6 before September 1) and 5 students in special education. Huron kindergartens use the daily all-day schedule in their first year of SMART.

Reading of 10 or more words at the end of kindergarten is a good indicator that a student will be reading text at the end of first grade. Word recognition is tested by quick oral reading of 10 or more words from the Brigance list, DRA list or other common sight words). Testing of SMART kindergarteners in May 2004 revealed that the median of class medians was 17 words (typical for SMART classes). The September class medians were all zero words read. The proportion of 97 regular kindergarteners reading 10 or more words from Huron kindergartens is an outstanding 78.3% of students in Title 1 schools who are on trajectory to read well at the end of grade 1. Of the 22% who did not read at least 10 words, a second year of SMART in first grade should boost reading to expected first grade levels (excluding students in special education).

The SMART program includes the maturation of phonemic awareness skills that are readiness foundation level abilities preparing students for phonetic analysis and decoding of unknown words. The Wepman Auditory Discrimination Test for phoneme discrimination was administered in September and May. The median of class medians improved from the 60<sup>th</sup> percentile (standard score of 104) to the 95<sup>th</sup> percentile (standard score of 125) in May. An amazing 96.9% of students scored at or above the normal range (above Q1) and are ready for first grade phonics instruction for word attack. Fewer than 4% of students scored in the lowest quartile.

SMART kindergarten print quality is measured with a May sample of 11 letters scored for communication/recognizability, orientation to lines/alignment, and coordination/continuity of straight and curved lines without corrective angles. This curriculum-based assessment for letters is conducted with kindergarten-size lined paper throughout the year and students are able to gauge the quality of their improvement. The SMART expectation for May kindergarten is the same as the middle of first grade (60% quality) for students not receiving the SMART program. The May quality median of class medians in Huron kindergartens was 76.5% letter quality and a huge 88.6% of students scored SMART quality or higher. Huron kindergarteners print well prior to entering first grade.

These SMART kindergarteners are experiencing success in mastering the curriculum and are ready for successful proficiency development in first grade.

## **First Grade Reading in Title 1 schools after 2 years of SMART**

Although first-graders in all Huron schools receive SMART programming and are assessed at the beginning and end of each grade for Developmental Reading Assessment levels and accuracy, plus many reading and writing skills, particular interest exists in enriching the readiness and early literacy skills of children attending Title 1 schools because these students are at-risk for school difficulties. This SMART cohort consisted of 37 students from 3 classes in 2 Title 1 schools, 23 of whom received meal assistance (62.2%). These classes included 8 minority students, 2 English Language Learners and 14 students identified early for Reading Recovery services. Seven students in special education students were excluded from the analysis. The DRA word list of 39 basic words was read by each student orally for word recognition within 5 seconds per word. The September median of class medians was 12 words, consistent with the May kindergarten reading minus the summer setback during which some students regress a bit in their abilities. The May median of class medians was all 39 words on the list. Amazingly, 100% of students mastered all 39 words (Every child read every word).

As with the kindergarten readiness for phonics, the Wepman Auditory Discrimination Test was administered to these first-graders at the beginning and end of the school year. The September median of class medians was only the 27<sup>th</sup> percentile (Standard Score = 91) and the May median of class medians rose to the 52<sup>nd</sup> percentile (Standard Score 100.5) and 75.6% of students scored above lowest quartile. These students are aware of differences in phonemes and have the readiness for continued improvement of phonetic word attack of unknown words.

N = 34 DRA\*\* Levels for Oral text reading levels for accuracy and comprehension were determined in September and May. The September median of class medians was at the high kindergarten level (Levels 1-2 with 98% accuracy) The May median of class medians was at the ending grade 2 proficiency (Level 28 with 98% accuracy). Of the 34 students tested, 70.6% (24) scored higher than beginning 2<sup>nd</sup> grad (Level 18) and more than half the students advanced 2+ years in text reading ability. These results show extraordinary progress for students in Title 1 schools.

## **Grade 2 Reading in Title 1 Schools Following 2-3 Years of SMART**

The second graders had already received at least 2 years of SMART enrichment of readiness and early literacy. The 48 students were from 4 classes in 3 schools (2 Title 1), and 29 students (60.4%) received meal assistance, including 5 racial minority students, 4 English Language Learners and excluding 6 students in special education.

Continuing advancement in phonemic awareness was measured as in K-1 with the Wepman Auditory Discrimination Test. The September median of class medians was the 33<sup>rd</sup> percentile (Standard Score =95.5) which improved to the May median of class

medians was at the 62<sup>nd</sup> percentile (Standard Score 105) and 81.25% of Ss scored above quartile 1, indicating mature awareness of differences in phonemes for word attack of unknown words.

Oral reading of text was measured using the Developmental Reading Assessment with DRA Level 34 for accuracy fluency and comprehension. The September median of class medians was mid-second-grade (Level 24 with 97% accuracy). The May median of class medians was mid-third-grade (Level 36 -- between levels 34 and 38) with 98% accuracy. September scores were high by almost one year and 75.0% (36/48) of students scored Level 28 or higher in May. Over half the students advanced more than one year, maintaining extraordinary progress and high reading levels for students in Title 1 schools.

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#### Wepman Auditory Discrimination Test

(Standard Score mean = 100, standard deviation = 15 points)

Developmental Reading Assessment (DRA) Levels: 94+% Accuracy and 80%

Comprehension Levels: K: A-B 1-2; Gr.1: 3-16; Gr.2: 18-28; Gr.3: 30-38)

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#### Comments:

These results are high and exemplary in effectiveness for Title 1 schools. The staff involved in SMART deserve congratulations for the development of high proficiency levels in reading. Similar results in mathematical calculation can also be expected when SMART classroom procedures are followed and instruction rather than testing is emphasized. The Huron Public Schools have a diverse SES population and the Title 1 schools are raising initial low readiness and academic skills to normal or superior levels in the K-2 years through SMART brain stimulation integrated into regular classroom curriculum. Almost all students are mastering basic skills in literacy and experiencing success in academics.

Huron has implemented SMART for four years with summer staff development to train school teams. The district has good articulation of integrated curriculum between special and regular classroom teachers. Some students have had SMART programming for three years. The high performance levels in reading are the cumulative effect of several components, with SMART as the platform for installing other programs and practices to further enhance learning and mastery of basic skills. SMART K-2 programming demonstrates effectiveness with students in Title 1 schools. The periodic testing of many skills with the DRA identifies particular students with a need for highly focused curriculum and individualized instruction. SMART provides an opportunity for earlier identification of students who are not progressing at the same rate of peers and provision of earlier intervention. Furthermore, increased attendance, fewer behavior problems and fewer referrals to special education are often reported. SMART provides the opportunity for the teacher to teach more for higher proficiency and higher levels.

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NOTE: Auditory discrimination scores for the 2003-2004 year declined in some students in grades 1 & 2. The readiness team should consider possible causes (inconsistent test administration, distractions, school schedule or event interference, distraction or

interruption during assessment, discrimination components during reading lessons, etc).  
Reviewing/retraining on Wepman administration and is indicated. September and May  
testing must be consistent and reliable.

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**References:**

Palmer, L. 2003 Developmental Brain Stimulation in School and Day Care Settings:  
SMART Overview. Winona, MN: Office of Accelerated Learning, Winona State  
University.

Palmer, L. 2003 National SMART Project Summary for Readiness and Early Literacy  
2001-2003, in *National Projects 2001-2003 Summary Report*. Minneapolis:  
Minnesota Learning Resource Center, Pp. 13-61.

Palmer, L. 2002 Stimulating Maturity through Accelerated Readiness Training, in  
*2000-2001 Summary Report*. Minneapolis: Minnesota Learning Resource  
Center. Pp. 9-56.

Palmer, L.L. and K. O. Proffit 2003 Boosting Early Literacy with Neuro-  
Developmental Readiness: The SMART Program in Huron, SD Regular Title 1  
Schools (Stimulating Maturity through Accelerated Readiness Training) Huron  
Public Schools, Huron, South Dakota, May, 2003. Minneapolis: Minnesota  
Learning Resource Center,

Palmer, L.L. and K. O. Proffit 2003 High Readiness Levels for First Grade in Huron,  
South Dakota: Stimulating Maturity through Accelerated Readiness Training  
(SMART) May, 2003 Minneapolis: Minnesota Learning Resource Center,  
Using the \*Metropolitan Readiness Test – Sixth Edition (MRT6) Level 2.  
Minneapolis: Minnesota Learning Resource Center.

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Table  
 May 2004 proficiency levels and proportions  
 Title 1 Schools, Huron, South Dakota

Table Grade	N	Class Medians		Proportions of Students	
		Median Class DRA	Median Class %ile Aud.Discr.	At/above Reading Expectation	at/above normal Aud. Discrimination Expectation
K	97	17 Words	95	78%	97%
First	37	39 words	52	71%	76%
Second	48		62	75%	81%

Reading levels

Table

**SMART Class Reading Proficiency in Title 1 Schools, May 2004  
 Students Receiving 2 or more years SMART programming**

Grade	N	Class Median DRA Levels		Proportions DRA Levels	
		95%+ Accuracy September	Fluency May	95%+ Accuracy September	Fluency May
First	37	1-2	28	64% *	71% DRA 18+
Second	48	24	34+	79% 18+	75% DRA28+

\*Beginning First Grade: reading 10+ high frequency words in May kindergarten

Table

Kindergarten Special Education MRT6\* Reading Readiness Results

\*Metropolitan Readiness Tests - Sixth Edition (Level 1) Pre-Reading Composite

Alternate-Day Class	N	Median St. Score	Median Percentile	N > SS 89 (25 <sup>th</sup> percentile)
Danbury, WI 2002	7 SpEd	90	25	2 (29%)
Half-Day Class Huron, SD 2004	6 SpEd	95	37	5 (83.3%)

MRT6 Pre-Reading Composite Standard Scores (Mean = 100, SD = 15)  
Redshirts excluded (students one year older than peers)