STRUCTURE YOUR READING PROFILE – JULY 2012

Results of a Two-Year Study on the Effectiveness of STRUCTURE Your Reading, a Strategic Reading Intervention, in Inclusive Middle School Classes

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STRUCTURE YOUR READING

GET IN GEAR

S Set a purpose.
Why am I reading this?

T Think about the topic.
What do I know about the topic?

R Run through to preview.
What's coming?

GO!

U Use strategies.
What tools will help me?

C Check comprehension
Do I understand?
Clarify confusing parts.
How can I figure it out?
Confirm predictions.
Are my guesses right?

LOOK BACK

T Tell your personal reaction.
How do I think and feel?

U Uncover critical content.
What are the key ideas?

R Review the reactions of others.
How do others think and feel?

E Explain your success!
How did strategies help me?

ABSTRACT

Results are reported on a two-year randomized control study that investigated the effectiveness of a structured approach to strategic reading (STRUCTURE Your Reading [SYR]) on the comprehension of text and the metacognitive behaviors of students in sixth-, seventh-, and eighth-grade language arts classes, co-taught by a general education and special education teacher. Year One participants were followed in Year Two with a new cohort in sixth grade. ANCOVA analysis revealed that Year One treatment groups at all grades had significant self-questioning or strategy gains with medium to large effect sizes and no significant gains in reading comprehension. In Year Two, neither sixth- nor seventh- graders in treatment groups gained significantly on the standardized reading comprehension measure; however, the seventh-graders made significant gains in self-questioning. Eighth-graders after two years made significant gains with large to very large effect sizes on all measures. Both high and low achievers made significant gains on reading comprehension and self-questioning with very large effect sizes for the low achievers. Special education students, including those with learning disabilities, showed medium to large effects for self-questioning and/or strategy use. Overall results indicate that SYR shows promise for teaching middle school students in general education and special education to be strategic readers.

The investigators have developed a "strateroutine" called STRUCTURE Your Reading (SYR) that builds on the extant research base in adolescent literacy, including work done at the University of Kansas Center for Research on Learning in its Strategic Instruction Model™ (SIM™) research, including Learning Strategies and Content Enhancement Routines. The components of SIM have undergone extensive testing with adolescents to validate the efficacy of this instructional approach (e.g. Deshler & Lenz, 1989; Deshler & Schumaker, 1988; Fisher, Schumaker, & Deshler, 2002; Schumaker & Deshler, 1992). The SYR instructional procedure provides an explicit, interactive way to teach students a systematic method to approach reading, so that students know how to employ strategies before, during, and after reading. It provides a context within which to teach specific reading comprehension strategies so that students can understand the role that individual strategies play in the total reading comprehension process. It also provides a package that helps students put together individual strategies that they have learned. Further, it allows for individualization of instruction within the instructional protocol.

PURPOSE

The purpose of this study was to investigate the effectiveness of the SYR strategic reading intervention on the metacognitive behaviors and reading comprehension of middle school students.
Research Questions:

- Do students who are taught SYR in a middle school language arts class perform better on the Degrees of Reading Power (DRP) test than students in a traditionally taught language arts class?
- Do middle school students who are taught SYR use self-questioning before, during, and after reading more frequently than students in a traditionally taught language arts class?
- Do middle school students who are taught SYR employ strategies more frequently before, during, and after reading than students in a traditionally taught language arts class?

Field-Test and Pilot Work
A preliminary field-test was conducted with SYR to test the steps and language of instruction with more than 60 middle school and high school students. Major revisions in the framework were made as a result. Pilot studies have been completed at a middle school, high school, and several juvenile justice facilities with more than 110 students to further refine the instructional protocol.

METHODS

Participants (N = 265)
Year One (N=166)
Students across sixth, seventh, and eighth grades were randomly

	Age Ranges
6th Grade	11-6 to 13-6
7th Grade	12-7 to 14-4
8th Grade	13-8 to 15-2

assigned to treatment and control inclusion language arts classes in a suburban middle school in a medium-sized school district in the U.S. Inclusion classes are defined as those general education classes following the regular curriculum standards for the grade in which students with disabilities are enrolled. Randomization procedures accounted for equivalent numbers of SWDs in each of the classes.

Year Two (N=176)
The Year Two study kept the rising seventh- and eighth-grade Year One classes of students remaining at the school intact for the next grade and added two new sixth-grade classes (N=60). In addition, students new to the school were randomly assigned to the seventh- and eighth-grade classes (N=39), and 29 students either moved to another school or class.

	Tx	C	TOTAL
Female	57	53	110 (45%)
Male	75	77	152 (62%)
Race: Caucasian	114	89	203 (83%)
Race: African-American	1	2	3 (1%)
Race: Hispanic	11	23	34 (14%)
Race: Other	0	4	4 (2%)
Free/Reduced Lunch	90	86	176 (72%)
SPED	33	31	64 (26%)
LD	28	25	53 (22 %)
ELL	3	1	4 (2%)
High Readers 45-99 %ile DRP	66	50	116 (60%)
Low Readers 1-44%ile DRP	54	65	119 (51%)

	1 Year Treatment	1 Year Control	2 Years Treatment	2 Years Control	Total Treatment	Total Control
6th Grade	55	53			55	53
7th Grade	21	28	18	17	39	45
8th Grade	19	12	21	21	40	33
TOTAL	95	93	39	38	134	131

Degrees of Reading Power (DRP) (Touchstone Applied Science Associates [TASA], 1995), a group-administered untimed test that is designed for students in grades six through 12 and over. It assesses how well students are able to reason with prose materials, including fiction and nonfiction passages.

Metacognition in Reading Inventory (MIRI), an informal inventory validated in pilot studies. Scoring criteria have been specified and inter-rater reliability measures have consistently been at .90 or higher. It is group administered and consists of a worksheet used by students to record information in two areas: (a) self-questioning before, during, and after reading and (b) use of strategies before, during, and after reading a passage. It employs two different 400-word expository passages.

PROCEDURES
Teachers
For Year One, a team of one general education teacher and one special education teacher who co-taught a language arts class in each of grades six, seven, and eight volunteered to learn and implement SYR. Another team served as controls at each grade, teaching reading in their customary fashion. In Year Two, the teaching teams for grades seven and eight were the same, with a different team in the sixth-grade treatment class. One special education teacher in the study, a certified SIM professional developer, served as the on-site facilitator. Participating treatment teachers received six hours of initial training on the SYR protocol with approximately nine additional hours of on-site follow-up support from the investigator, including fidelity checks.

Intervention
Treatment class teachers implemented SYR in their inclusive language arts classes over a 12 week period during the regular school year. The SYR protocol is organized in 17 phases of instruction, each with a targeted outcome that guides the pace of instruction, designed to meet the needs of students. The SYR packaging strategy has eight steps, employing the mnemonic "STRUCTURE" to prompt students through the strategic reading process.

Each step has a self-questioning prompt and strategic action associated with it. The protocol incorporates the eight Stages of Acquisition and Generalization of SIM Learning Strategies (KUCRL) as well as the Cue, Do, Review sequence of SIM Content Enhancement Routines (KUCRL).

	Dosage Year One	Dosage Year Two
6th Grade	14 hrs.	68 hrs.
7th Grade	39 hrs.	90 hrs.
8th Grade	20 hrs.	29 hrs.

Analysis
Analysis of Covariance (Test of equality of means at posttest adjusted for pretest scores) was used in analyzing data. Effect sizes using Hedges g were calculated for p values <.25. However, in interpreting results, effect sizes associated with p values <.05 were considered. Analysis for high and low achievers combined grades, as did the analysis for special education (SPED) and learning disabilities (LD) subgroups.

Year One	DRP			Questioning			Strategies		
	F	p.	Effect Size*	F	p.	Effect Size*	F	p.	Effect Size*
6th Grade (N=48)	2.954	.094	.33	4.662	.037	.83	11.838	.001	1.11
7th Grade (N=59)	2.334	.133	.33	.005	.941	NA	5.041	.029	.585
8th Grade (N=59)	.956	.334	NA	12.287	.001	.98	2.589	.115	.50

In Year One, the sixth-grade Control Group performed better on DRP than the Treatment Group, but not significantly so and with small effect size. The sixth-grade Treatment Group had significantly better Questioning and Strategies with large effect sizes than the Control Group. The seventh-grade Treatment Group had significantly better Strategies (medium effect). The eighth-grade Treatment Group had significantly better questioning with large effect size.

Year Two	DRP			Questioning			Strategies		
	F	p.	Effect Size*	F	p.	Effect Size*	F	p.	Effect Size*
6th Grade (N=60)	1.789	.188	.24	.891	.351	NA	2.117	.153	.46
7th Grade -Two Yrs. in Tx (N=35)	.834	.369	NA	4.562	.042	.75	.793	.381	NA
7th Grade - Whole Group (N=60)	1.153	.289	NA	1.946	.171	.40	.144	.706	NA
8th Grade -Two Yrs. in Tx (N=42)	20.633	.000	1.16	27.528	.000	1.90	6.732	.014	.89
8th Grade - Whole Group (N=56)	27.275	.000	1.25	30.481	.000	1.79	10.233	.003	.97

In Year Two, seventh-graders in the Treatment Group for two years had significantly better Questioning with a medium to large effect. The eighth-graders in general (the whole group and those in treatment for two years) had significantly better DRP, Questioning, and Strategies scores with large to very large effect sizes.

After 1 Year	DRP			Questioning			Strategies		
	F	p.	Effect Size*	F	p.	Effect Size*	F	p.	Effect Size*
High Achievers N=116	.225	.637	NA	1.64	.203	.23	3.95	.05	.36
Low Achievers N=119	2.54	.114	.45	5.54	.021	.50	9.31	.003	.65
SPED N=70	1.646	.205	.24	1.966	.167	.39	5.581	.022	.67
LD N=57	1.82	.184	.28	4.90	.033	.65	6.88	.012	.80

After 2 Years	DRP			Questioning			Strategies		
	F	p.	Effect Size*	F	p.	Effect Size*	F	p.	Effect Size*
High Achievers N=46	5.28	.027	.67	8.72	.005	.94	2.04	.161	.44
Low Achievers N=26	9.89	.005	1.28	15.28	.001	1.78	2.40	.138	.74
SPED N=31	3.02	.096	.62	.919	.347	NA	4.19	.051	.80
LD N=28	2.48	.130	.78	1.28	.270	NA	1.51	.232	NA

* Hedges g

High achievers in the Treatment Group had significantly better DRP scores with medium effect size and significantly better Questioning with large effect size after two years. Low achievers in the Treatment Group had significantly better Questioning with medium effect size after one year; they had significantly better DRP scores with large effect size and significantly better Questioning with very large effect size after two years. Adolescents in special education (SPED) in the Treatment Group had significantly better Strategies with medium effect size after one year and significantly better Strategies with large effect size after two years. Adolescents with learning disabilities (LD) after one year had significantly better Questioning with medium effect size and Strategies with large effect size.

CONCLUSIONS

1. After one year of instruction in the SYR strateroutine, treatment groups at all grades demonstrated significant gains in either (or in sixth grade both) the asking of self-prompting questions or the use of strategies before, during, and after reading. However, no significant gains were made on the standardized reading measure (DRP). A plausible explanation is that learning metacognitive behaviors such as self-questioning and strategy use may take more time to generalize to standardized testing than the dosage (14-39 hrs.) facilitated. An equally plausible explanation is that the format of

the DRP did not lend itself to the use of the SYR packaging strategy, which was designed to promote strategic reading in authentic classroom reading tasks.

2. In Year One, the sixth-grade control group out-performed the treatment group, albeit not significantly and with a small effect size. Although the sixth-grade treatment group did significantly better in self-questioning and strategy use, fidelity checks revealed sporadic attention to overall reading comprehension with a low dosage (14 hrs.) of SYR instruction in the treatment class.

3. The most dramatic results were seen in Year Two with eighth-grade students in the treatment group, who made significant gains with large to very large effect sizes on the standardized reading comprehension measure as well as self-questioning and strategy use. It is reasonable to suspect that maturation with these older students may enhance their ability to engage in metacognitive tasks and apply metacognitive behaviors to a broad array of reading tasks, including standardized tests.

4. In Year Two, neither sixth- nor seventh-grade adolescents in treatment groups had significant increases in reading comprehension scores, with only seventh-graders who had received SYR instruction for two years making significant gains in metacognitive behaviors with medium to large effect size (.75) in self-questioning, even with higher dosages in Year Two (sixth=68; seventh=90). Interpretations proffered in #1 may apply. Additionally, fidelity may be an issue; a more detailed approach to fidelity checks is warranted in future research.

5. Both high and low achievers appear to benefit from SYR instruction in terms of metacognitive behaviors and reading comprehension but more so after two years of instruction with larger effects for the low achievers. Both favored self-questioning.

6. SPED students and the LD subset showed gains in strategies after Year One, with large effects for the LD group. The LD group also showed gains in self-questioning with medium effect size. After Year Two, only the SPED group as a whole showed significant gains in use of strategies with a large effect.

7. The SYR instructional protocol calls for equal attention to the self-questioning prompts and strategic actions associated with each step of the strateroutine. It is therefore interesting to note that in some instances, the adolescents evidenced better use of one over the other. It is possible that teacher emphasis on one could account for those results. It is also possible that students may favor the use of one metacognitive behavior over the other. Future research might explicate the relationship of self-questioning and strategic action in metacognitive reading tasks.

REFERENCES

Baker, L., & Brown, A.L. (1984). Metacognitive skills and reading. *Handbook of Reading Research*, 3, 353-394.

Borkowski, J.G. (1992). Metacognitive theory: A framework for teaching literacy, writing, and math skills. *Journal of Learning Disabilities*, 25(4), 253-257.

Deshler, D.D. & Schumaker, J.B. (1986). Learning strategies: An instructional alternative for low-achieving adolescents. *Exceptional Children*, 52(6), 583-590.

Duffy, G.G. & Roehler, L.R. (1989). Why strategy instruction is so difficult and what we need to do about it. In C.B. McCormick, G. Miller & M. Pressley (Eds.) *Cognitive strategy research: From basic research to educational applications.* New York: Spriger-Verlag.

Edmonds, M., Vaughn, S., Wexler, J., Reutebuch, C., Cable, A., Tackett, K., & Schnakenberg, J. (2009). A synthesis of reading interventions and effects on reading comprehension outcomes for older struggling readers. *Review of Educational Research, 79*(1), 262–300.

Gersten, R., Fuchs, L.S., Williams, J.P., & Baker, S. (2001). Teaching reading comprehension strategies to students with learning disabilities: A review of the research. *Review of Educational Research, 71*(2), 279–320.

Kamil, M.L., Borman, G.D., Dole, J., Kral, C.C., Salinger, T., and Torgesen, J. (2008). *Improving adolescent literacy: Effective classroom and intervention practices: A Practice Guide* (NCEE #2008-4027). Washington, DC: National Center for Education Evaluation and Regional Assistance, Institute of Education Sciences, U.S. Department of Education. Retrieved June 23, 2009.

Mastropieri, M.A., & Scruggs, T.E. (1997). Best practices in promoting reading comprehension in students with learning disabilities: 1976 to 1996. *Remedial and Special Education, 18*(4), 197-213

National Reading Panel (2000). *Teaching children to read: An evidence-based assessment of the scientific research literature on reading and its implications for reading instruction: Reports of the subgroups.* Washington, DC: National Institute of Child Health and Development.

Palincsar, A.S. (1986). The role of dialogue in providing scaffolded instruction. *Educational Psychologist, 21*, 73-98.

Pressley, G.M., & McCormick, C.B. (1995). Strategies and metacognitive regulation of strategies: Basic theory and research. In *Advanced educational psychology for educators, researchers, and policymakers* (pp. 27-47). New York: Harper Collins College Publishers.

Pressley, G.M., Borkowski, J.G., & Schneider, W. (1987). Cognitive strategies: Good strategy users coordinate metacognition & knowledge. *Annals of Child Development, 4*, 89-129.

Pressley, G.M., Brown, R., Beard El-Dinary, P., & Afflerbach, P. (1995). The comprehension instruction that students need: Instruction fostering constructively responsive reading. *Learning Disabilities Research & Practice, 10*(4), 215-224.

Scammacca, N., Roberts, G., Vaughn. S., Edmonds, M., Wexler, J., Reutebuch, C.K., & Torgesen, J.K. (2007), *Interventions for adolescent struggling readers: A meta-analysis with implications for practice.* Portsmouth, NH: RMC Research Corporation, Center on Instruction.

Torgesen, J.K., Houston, D.D., Rissman, L.M., Decker, S.M., Roberts, G., Vaughn, S., Wexler, J., Francis, D.J., Rivera, M.O., & Lesaux, N. (2007). Academic literacy instruction for adolescents: A guidance document from the Center on Instruction.

Wanzek, J., Wexler, J., Vaughn, S., & Ciullo, S. (2010). Reading interventions for struggling readers in the upper elementary grades: *A synthesis of 20 years of Research. Reading and Writing: An Interdisciplinary Journal, 23*(8), 889-912.