Teachers as Facilitators of Students' Strategic Performance: Promoting Academic Success by Secondary Students with Learning Difficulties

Poster Overview

Deborah L. Butler
Sandra Jarvis
Beverly Beckingham
Helen Novak
Cory L. Elaschuk

University of British Columbia

Running Head: TEACHERS AS FACILITATORS OF STUDENTS' STRATEGIC PERFORMANCE

Introduction

The poster describes findings from the first year of a two-year collaborative research project investigating strategies for promoting self-regulated learning by students with learning difficulties in secondary settings.

Theoretical Rationale

Educators seek to define instructional models that foster the development of self-regulation.

Strategic Content Learning (SCL) is one instructional approach designed to support self-regulated learning.

Research has documented SCL efficacy for students with *learning disabilities* within post-secondary settings, within three common service delivery models:

1. one-on-one tutoring by LD specialists or teachers;
2. peer tutoring;
3. group-based "study skills" classes.

Based on the findings from these studies (Butler 1995, 1998c; Butler et al., 2000; Butler, Elaschuk & Poole, 2000), SCL was adapted for use with secondary students.

Researchers and teachers collaborated to define systems for implementing and evaluating SCL in resource and learning assistance settings.

Research Questions

In resource and learning assistance settings, what outcomes were associated with using the SCL intervention?

- based on pretest/posttest assessments;

- from the perspective of teachers;

- based on qualitative tracing of students' progress in case studies.

Strategic Content Learning (SCL) Model

SCL engages students in the cognitive activities central to self-regulated learning (see figure below). Students are assisted to develop, master, and implement POWERFUL, PERSONALIZED LEARNING STRATEGIES and to use those strategies flexibly and adaptively in the context of meaningful tasks (Butler 1993, 1995, 1998a).

Context

1. Teachers support students to analyze tasks.

2. Students are assisted to select, adapt or invent strategies that match task demands and build from what they already do well.

3. Students are assisted to monitor progress and make changes to be more successful.

4. Teachers help students build knowledge and beliefs that support effective learning.

5. Teachers actively guide students' cognitive processing and support their active reflection of what works.

A Model of Self-Regulated Learning
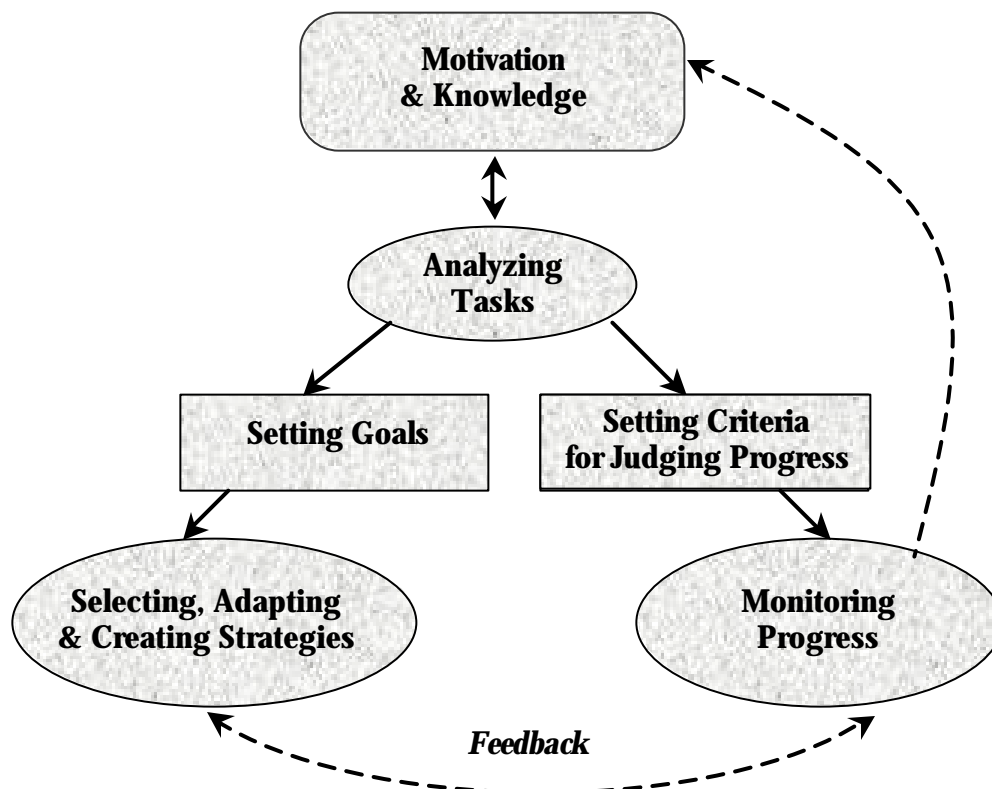
Teacher Researcher Collaboration Model*
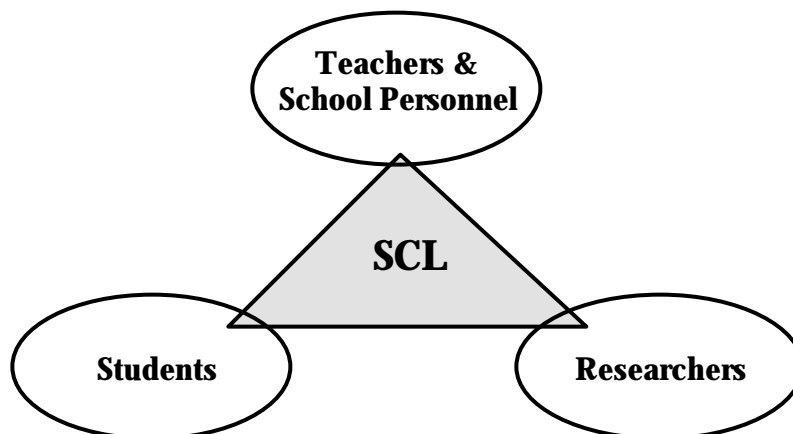
A Description of the Process of Collaboration

Content

- 9 teachers participated across four schools in resource/ learning assistance settings
- Students ranged from grade 8 to grade 11
- Four schools in a suburb of a large Canadian city participated in the project. One of these schools was newly opened the year before the start of the project, while the other school had been established for over two decades.
- Two of the schools operated on a semester system with resource blocks offered to students daily. Of these two schools, one was undergoing major renovations.

Process

- Teachers and researchers met in an initial workshop presented as part of the school district's professional development program. The focus of the workshop was on defining common goals and general instructional principles.

- Throughout the year, teachers and researchers collaborated to define systems for implementing SCL in secondary settings and for developing research procedures.

- Researchers visited the schools regularly to observe SCL in contexts, provide support to teachers in terms of research and intervention processes, and assist in data collection.

- Three times during the year, teachers across schools, researchers, and district personnel met to share ideas and to discuss the process and progress of the project.

- At the end of the year, teachers were interviewed about their experiences of the project. Through this process as well as those above, teachers' feedback informed changes for the next year of the project.
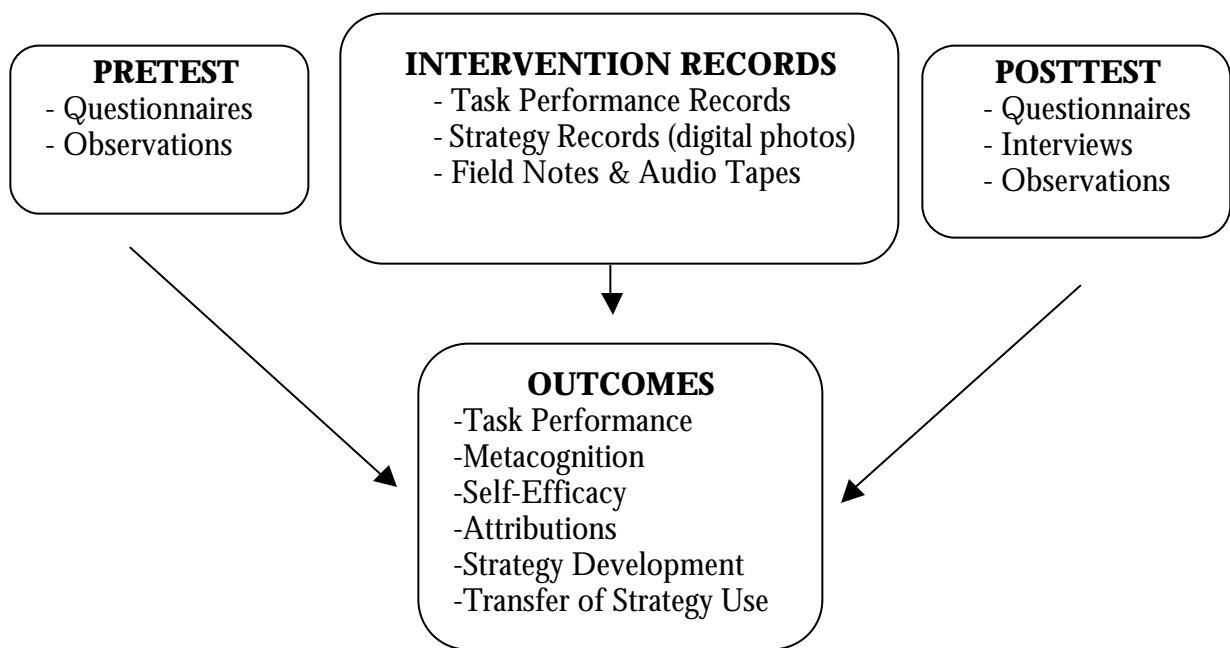
*For a complete description of the process of teacher-researcher collaboration, see Butler et al., 2001.

Research Process: Data Collection Across Schools

**The following complementary data collection strategies were used in the project:**

- pretest-posttest measures of student outcomes in self-efficacy, perceptions of control, and metacognitive understanding;

- case study records of student outcomes and the process of intervention; and

- final interviews with teachers and records of all-schools meetings.

Research Process: Research Design

PRETEST
- Questionnaires
- Observations

INTERVENTION RECORDS
- Task Performance Records
- Strategy Records (digital photos)
- Field Notes & Audio Tapes

POSTTEST
- Questionnaires
- Interviews
- Observations

OUTCOMES
-Task Performance
-Metacognition
-Self-Efficacy
-Attributions
-Strategy Development
-Transfer of Strategy Use

Year-Long Secondary School Schedules (n=2)
These schools provide resource or learning assistance support on a two-day rotation.
Students' schedules are based on a Day 1 / Day 2 schedule.

Pretest	Intervention	Posttest

| Pretest	Intervention	Posttest	Pretest	Intervention	Posttest
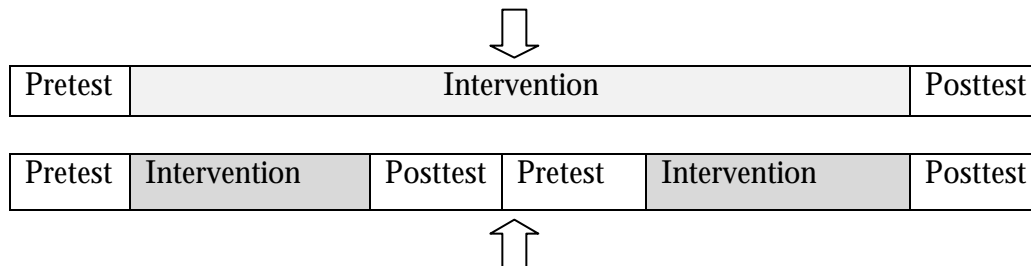
Semestered Secondary School Schedules (n=2)
These schools provide resource or learning assistance support every single day. Students'
schedules are based on a 2-term semester system.

Research Process: Participants and School Contexts

School	School Settings	School Calendar	Teachers	Students Intervention	Students Control	Students Total
Burrard	Resource	Semester	1	4	0	4
Malone	LA	Year-long	2	6	8	14
Nathaniel	Resource	Semester	4	25	5	30
Raleigh	Resource	Year-long	2	18	6	24

Participants were members of resource/learning assistance (LA) rooms in four suburban secondary schools. Students (grades 8-11) received services for a variety of learning difficulties ranging from diagnosed learning disabilities, behavioural problems (including ADD), physical disabilities and other students receiving services without specific documentation.
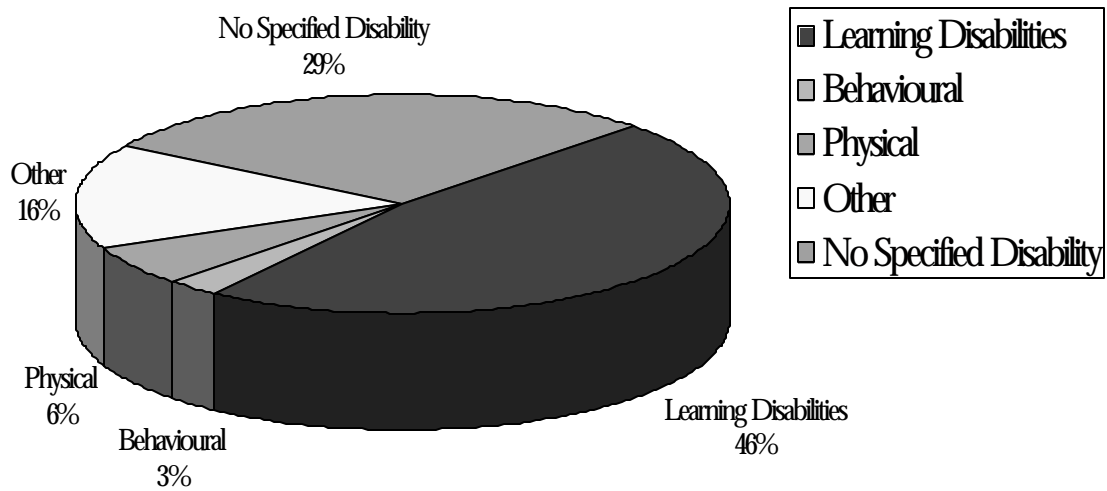
Results

I. Teacher Perceptions of Student and Teacher Outcomes

In all-schools meetings, school visits, and individual interviews, teachers reported observing a number of positive outcomes.

Student Outcomes	Teacher Outcomes
Concrete Benefits	**Concrete Benefits**
?? Increased confidence ?? More independent ?? Improved work ethic & control over academic responsibilities ?? Greater self-awareness & self-direction	?? Better able to manage classroom routines ?? Enhanced relationships with students ?? Improved teaching practices ?? Personal/Professional Gains
Active Learning	**New Insights into….**
?? Improved strategy focus & development ?? Enhanced strategies ?? Better awareness of task demands	?? Students and their needs ?? Their relationships with students ?? Their Own effectiveness as teachers ?? Their Own teaching style

---

In Teachers' Words…

?? *"Other people observed that my students were more self-directed. I would sit back and think, wow, these kids really are more self-directed and becoming independent learners." (Dona).*

?? *"Students' approach to the task improved from the beginning of the year. They definitely had the idea that it's important to understand the question and come up with some attach strategies. I think also, self-confidence." (Marg).*

?? *"I definitely think they have gained from thinking more independently." (Doris)*

?? *"It's an approach that respects them and impacts on self-esteem. And it helps them to take control and feel in control." (Sara)*

?? *"It gave them strategies to focus on and look at and say, 'oh yeah, this does apply pretty much right across the board, or, I can adapt it.'" (Sue)*

?? *"That's my philosophy. SCL made me realize I need to do less talking and give more wait time and give them more opportunity to do more thinking." (Lynn)*

Teachers' Perceptions of Outcomes for Students

	Lynn	Marg	Dona	Sue	Deb	Katy	Sofie	Sara	Barb	Doris	AS1	AS2	AS3
Improved confidence		13-15 17-19	14-19		132-5			47-8			85	129	
Better awareness of task demands		13-15 17-19 33-35		42-3 216-17 236-38									
Better strategies	214-19		21 24-25 108-9 214-18	28-30 36-39 51-54	206-13					13-16	95	129	
Self-awareness		21-25				9-18				10-11	85		
Independence, ownership or control, self-direction		150-51	14-19 29-32 49-51	13-15 19-22 248-50		9-18		8-11 40-42	75-78	13-16	85 93 102	100 101 129	129 177
General positive outcomes (e.g., good progress)		47-50	34-9	51-54 78 205 238			90-91	8-11					179
TOTAL	X	X	X	X	X	X	X	X	X	X	X	X	X

Notes: Pseudonyms represent teacher participants; AS# = the first, second, or final all-schools meeting; table entries correspond to the referent for a piece of evidence included in the table (e.g., Lynn 214-19 = lines 214-219 from Lynn's final interview); X indicates the columns for which there are entries for at least one teacher.

The above table presents a summary of student outcomes as perceived and articulated by teachers. These data, gleaned from interviews and all-schools meetings, suggest that each teacher identified various positive outcomes for their students (see the last row of X's in the above table). In addition to describing some gains in general terms (e.g., students "did well"), teachers described gains for their students in terms of: (1) confidence, (2) understanding task demands, (3) strategies related to learning, (4) self-awareness, and most significantly, in their (5) sense of independence, self-directedness, responsibility, and/or control over their own learning processes.

In Teachers' Words…

?? *"Ali gained confidence in her ability and has taken full ownership over her learning." (Dona)*

?? *"I saw the progress some of the students made and the sense of accomplishment they seemed to feel when they got their marks back." (Sue)*

?? *"For Darian it was her organization that improved. I would say that gains were seen in the areas that we worked the most with SCL. For Darian, this is where the need was. At the end, she definitely had more of an awareness of what worked for her." (Marg)*

Teachers' Perceptions of Outcomes for Themselves

	Lynn	Marg	Dona	Sue	Deb	Katy	Sofie	Sara	Barb	Doris	AS1	AS2	AS3
Concrete benefits for practice			71-73 74-75 146-51 163 189-90	158 235	108-09 172-74		206-09	127-33 199-201	200-01 464-68 650-53		85 102 103	129 145	177
Improved relationships with or understanding of students	214-19	41-42 190-92 192-95 200-04	172-73 174-77	248-50				15-19	10-11 46-48 211-13 658-63		85	129	175 176
Insights into teaching style or effectiveness	224-28	209-10	74-75 189-90 194 214-18	196-98 238	58-60 95-98 188-90 194-201	60-64 64-71 224-28		52-53 193-195	668-69	513-18 537-38	91	129	173
Statements of value of SCL components or approach	179-83 214-19 224-28	190-92 192-95	108-09 181-83 189-90 194 201 214-28	196-98	194-201	60-64 64-71 224-28		52-53 193-195	668-69		85 91	129	173 176
TOTAL	X	X	X	X	X	X	X	X	X	X	X	X	X

Notes: Pseudonyms represent teacher participants; AS# = the first, second, or final all-schools meeting; table entries correspond to the referent for a piece of evidence included in the table (e.g., Lynn 214-19 = lines 214-219 from Lynn's final interview); X indicates the columns for which there are entries for at least one teacher.

This table presents a summary of outcomes experienced by the teachers who participated in the research project. Every teacher was able to identify some positive outcomes that they experienced during the first year of the intervention study (as indicated by the X's in the final row of this table). Teachers described gains within three broad categories: (1) concrete benefits for practice, (2) greater insights into their teaching style, philosophy, or effectiveness, and/or (3) improvements in relationships/communication with their students.

In Teachers' Words…

?? *"The spin off as we noticed in the fall, and continue to, is it sets a tone. In the class, a focus on working and supporting and really thinking about what you're doing and it's a good sort of settler." (Sofie)*

?? *"SCL helped me to sit down and analyze what had to happen." (Sue)*

?? *"I really like the fact that it's based upon individual students. I like that it gives focus, structure to your teaching, helps me keep the goal in mind." (Sara)*

II. Pre- / Post-Test Measures

Pre-and posttest questionnaires included measures of: self-efficacy, attributions, perceptions of control over outcomes, and metacognitive knowledge. Analyses showed consistent gains across students on only a subset of these measures. Gains were observed in:

A. Students' Attributional Patterns (Borkowski, 1992)
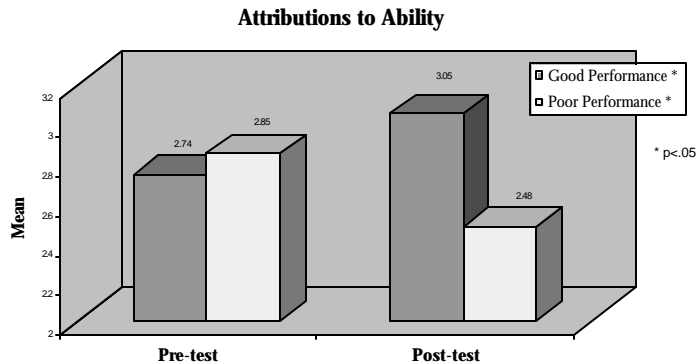
Attributions to Ability

In comparing the questionnaire data from pretest to posttest, it was shown that after the first year of the intervention, students were more likely to link success with higher ability and were less likely to blame low ability for failure.
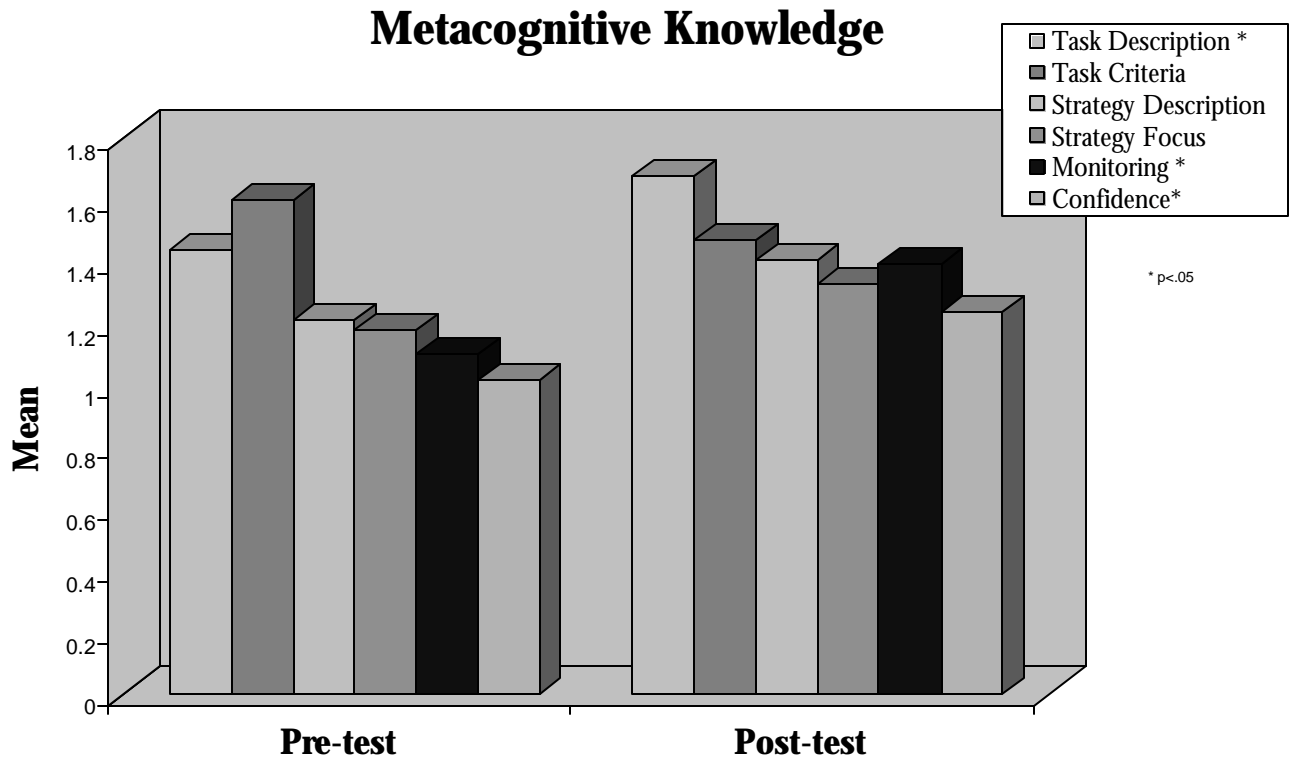
Measure	Pre-test		Post-test		t	p
	Mean	S.D.	Mean	S.D.		
Good Performance	2.74	1.19	3.05	1.08	-1.95	.026 *
Poor Performance	2.85	1.33	2.48	1.24	1.92	.029 *

In comparing the questionnaire data from pretest to posttest, it was shown that after the first year of the intervention, students were more likely to link success with effective strategies.

Attributions to Strategies
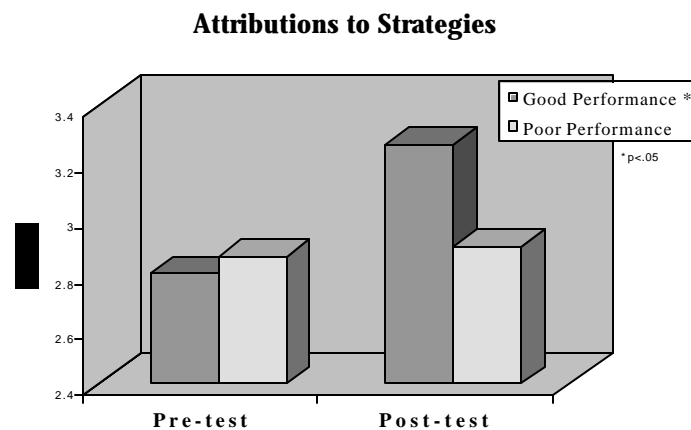
Measure	Pre-test		Post-test		t	p
	Mean	S.D.	Mean	S.D.		
Good Performance	2.79	1.20	3.26	1.28	-2.47	.01 *
Poor Performance	2.85	1.32	2.89	1.27	-0.18	.43

B. Metacognitive Knowledge (Butler, 1998b, Wong, 1991)

Metacognitive Knowledge

Legend:
- Task Description *
- Task Criteria
- Strategy Description
- Strategy Focus
- Monitoring *
- Confidence*

* p<.05

Measure	Pre-test		Post-test		t	p
	Mean	S.D.	Mean	S.D.		
Task Description	1.44	1.05	1.68	1.02	-1.87	.03 *
Task Quality	1.60	.86	1.47	.92	1.07	.14
Strategy Description	1.21	.87	1.42	1.06	-1.52	.07
Strategy Focus	1.18	.93	1.34	.94	-1.43	.08
Monitoring	1.10	.82	1.39	.84	-3.22	.00 *
Motivation/Confidence	1.02	.91	1.24	.99	-1.88	.03 *

Analyses of questionnaire data showed that students described more accurate perceptions of task demands, and better criteria for monitoring their performance at post-test then they had at pre-test. As well, the metacognitive data showed that students described themselves as being more confident by the end of the SCL intervention.

C. Self-Efficacy (Bandura, 1993; Schunk, 1994)

Self-Efficacy

□ Task Specific Self-Efficacy *
□ General Self-Efficacy *

p<.05

Mean

3.3
3.2
3.1
3
2.9
2.8
2.7
2.6

Pre-test   Post-test
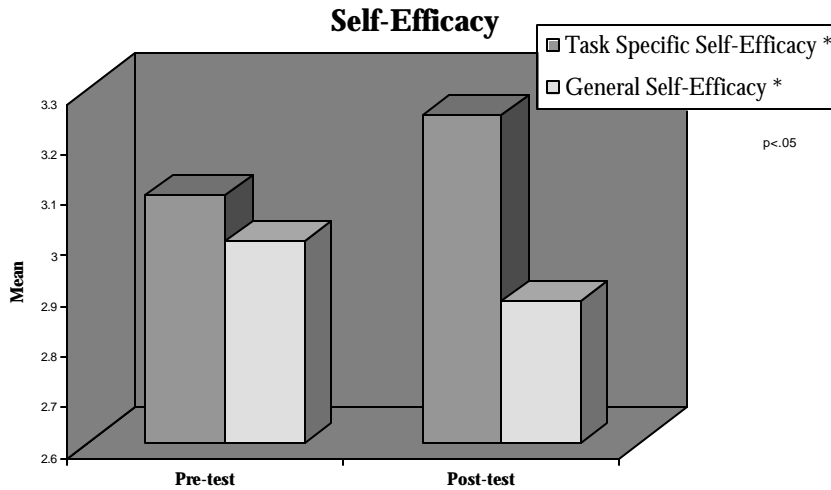
As expected and consistent with prior research (see Butler, 1998c) improvements were not found in general perceptions, however, students reported greater task specific perceptions of self-efficacy at the end of the project.

| Measure	Pre-test		Post-test		t	p
	Mean	S.D.	Mean	S.D.		
Task-Specific Self-Efficacy	3.09	0.79	3.25	0.77	-1.71	.05 *
General Self-Efficacy	3.00	0.52	2.88	0.68	1.78	.04 *

III. Sample Case Studies

<u>Case Study: Jake</u>

At the time of the study, Jake was a grade 8 student with "delayed skills" reported since the first grade. The following table reports information from Jake's seventh grade "transition plan" and teacher observations:

Strengths	Areas Requiring Support
?? Outstanding artist	?? was in modified English & adapted math programs
?? willing to work hard	?? support in starting assignments
?? can do research	?? focusing attention
?? strong visual learner	?? using classtime well
?? amazing perceptual speed	?? writing skills
?? global, holistic learner	?? sequencing and vocabulary
?? good decoding skills	?? listening skills
?? neat handwriting & good spelling	

<u>Evidence of Jake's Strategy Development and use of SCL in Context</u> (as documented in Qualitative Case Records)

Source	Evidence
Student Strategy Sheets	Sept. 28: "read over assignments and think about it or talk about it in your head" Oct. 29: "I used the first stratigie and go 9/10 on my quiz." Oct. 4-6: Jake developed strategies for organizing his work
Grade Reports	By November 19, "C" to "C+" in academic courses; Missing work Oct 28 50% improvement in math grades in semester 2
Teacher Reflections	Sept: 28: Teacher-researcher describes Jake's strategy for learning Oct. 4-6: Jake constructed strategies for Medieval assignment; 9/10 on English quiz Oct. 13: Jake dealing with the assignments missed Working independently on Math in Semester 2
Classroom Observation	Jake paying attention to assignments in Math and teacher instruction

Jake's Math Strategies

Jake's Math Quiz
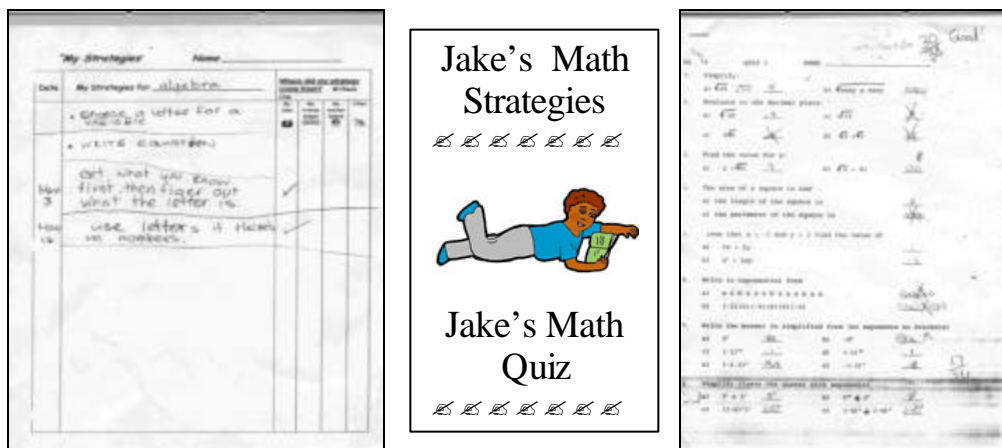
Jake's Gains (as reported in Qualitative case records)

Active thinking and Strategy Use	"Wait! Let me think" "I used the first strategie and got 9/10 on my quiz"
Confidence	"I'm smarter than my brother now!" "math is easy "once you get the hang of it"
Independence and Motivation	Works diligently in class Pays attention to teacher and assignments
Grades	2nd highest grade in his math class no support blocks next year

In Jake's words….

?? *"I have learned how to read scales for socials. I've learned how to study for the right things and to rememberize things that I need to bring to school"*

?? *"My goals are to work my hardest, every day and to remember to hand in all my stuff on time. Last but not least I have to try not to get sespended."*

Jake took part in the SCL intervention over two semesters. In the first semester he focused on building strategies for reading and studying tasks. In the second semester, Jake worked with his teachers on building strategies for math. Jake's posttest questionnaires did not capture gains that he made during the year. In fact, in some measures (i.e., metacognitive understanding), Jake's scores showed a decrease rather than an increase. However, by the end of the second semester, Jake's grades had improved markedly (see evidence table above) and with the support of the resource teachers, he had decided that he could succeed without an extra support block during the next academic year. Also, there was considerable qualitative evidence of an increase in self-confidence and strategy use. Taken together, these findings not only lend support to the need for multi-faceted and complementary (i.e., quantitative and qualitative) data collection strategies, but also provide insight into the dynamics of how the school year was experienced by one individual.

Case Study: Sami

At the time of the study, Sami was a grade 10 student with "severe learning disabilities" as reported in her Grade 10 Individual Education Plan (IEP).

Strengths	Areas Requiring Support
?? enjoys art and P.E.	?? alternate math program
?? reads at grade 6/7 level	?? developing friendships
?? can write ideas clearly	?? to ask for help when she needs it
?? better at verbal reasoning, expressive vocabulary, and perceptual organization	?? to become a more active learner
?? loves high school	?? much repetition and review
?? cooperative and hardworking	?? extra time to process information and respond

Sami's Tasks and Strategy Development: SCL in Context (As documented in Qualitative Case Records)

Sept. 27: Sami studying for an element quiz in chemistry

Sept. 30: Studying for a science test: "Sami tried practice questions…which we discussed. By the end of the block, Sami reviewed all her material without her notes." (got 85%)

Oct. 4: Interpreting concepts in science notes and making connections between ideas. "I asked her to read each point and explain it. At the end, she said, when asked why she was understanding (and what she could do), she said "explain it"

Oct. 5: "She thought of a strategy for studying for Science while she was working on her English strategies."

Oct. 6: "Sami started a strategy sheet and developed a step for herself [the first step]. She also thought back to what we did on Monday and added that making connections between notes sections helped her understand."

In Sami's Words….

?? *"Putting effort into my works gets me a "A"…Never give up no matter how hard the task is. It is good to have steps for studying for quiz's and test. Asking questions can help to fully understand things. Working hard pays off"*

?? *"I learned so much about study skills that helped me when I studied for my finals. I thought of words that were like the work I had to learn…I read test questions slower to understand tests. I highlighted unknown material and put it on Q-cards. I teach the stuff to someone else and after we talk about it. I learned being organized helps to organize you are studying. Checking over my work has help. Learning how to do a test without the textbook and I learned that when writing my final."*

Sami's Progress (as reported in qualitative case records)

Sami's course marks	English C; Science C; Math C; Social Studies B
The 5 best things about the year according to Sami:	Getting 90% on a social studies assignment Getting 86% on a math test Getting an "A" on a map I did in social studies Getting a "B" in drama Getting good grades
Teacher's Observations	Improved independence and confidence Uses strategy sheets as tools on an ongoing basis

Sami participated in the SCL intervention over two semesters. In the first semester she worked on building strategies for reading and studying tasks. In the second semester, Sami worked with her teachers on building strategies for math. Compared to many intervention students, Sami was very productive in terms of number of strategies she constructed and co-constructed with her teachers. Moreover, the efficacy of the strategies she employed in her studies was evidenced by the gains that she made. In her case, gains were captured in both quantitative and qualitative measures.

Conclusions

Taken together, data from questionnaires, teacher interviews, and in-depth case studies suggest that students who participated in the SCL intervention made gains in:

Gains	Evidence
• **Self-Confidence**	• Students linked success with higher ability and were less likely to blame low ability for failure (see attributional patterns) • Students described themselves as more confident (see self-efficacy & case study) • Teachers described students as more confident (see teacher perceptions)
• **Perceptions of Control Over Learning**	• Students linked success to use of effective strategies (see attributional patterns) • Teachers described students as taking more control over their learning (see teacher perceptions)
• **Metacognitive Knowledge**	• Students described more accurate perceptions of task demands and better criteria for monitoring performance (see metacognition) • Teachers described students as experiencing gains in understanding of task demands, strategy development, and self-awareness (see teacher perceptions)
• **Strategic Approaches to Academic Work**	• Teachers described students as more independent, self-directed, and responsible for learning processes (see teacher perceptions) • Students developed personalized strategies that could be linked to meaningful outcomes (see case studies)

In all-schools meetings and final interviews, teachers also reported gains for themselves in terms of their:

- Teaching approach and effectiveness
- Understanding of teaching and learning processes
- Understanding of the needs of their students
- Relationships with students

Caveats and Continuing Research

The data reported in this poster are derived from an on-going collaborative project, where procedures and strategies are still developing. The findings reported here are based on preliminary data analyses from the first year. Additional data analyses are underway of case study data across all participants (including systematic analyses of changes in students' task performance). Full evaluation of SCL efficacy in the first year requires completing these additional analyses.

Analyses at the end of the second year also will give provide a fairer test of SCL efficacy in learning assistance, resource, and whole classroom settings. Given challenges in the first year of the project, we made a number of revisions to research procedures in the second year. These included:

- Collecting additional control group data to establish a two-group, pre-posttest design

- Increasing the number of participants in whole classroom settings to better evaluate SCL efficacy

- Revising questionnaires to better capture changes in students' self-perceptions and metacognition

- Revising data recording systems to make them easier for teachers

- Using a standardized approach to measuring changes in students' task performance, along with in-depth case study data

- Shifting the timing of posttest questionnaires (not to coincide with final exams)

In addition, two key questions drive our investigation in the second, and subsequent years. These questions are ultimately crucial to determining the success of our efforts. These are:

- What kinds of classroom routines or procedures support a full and on-going implementation of SCL in varying classroom contexts (e.g., getting students to consistently record, not just talk about, strategies)?

- How effectively did our approach to professional development/collaboration foster long-term and meaningful changes in teachers' practice in classrooms (see Butler et al., 2001)?

References

Bandura, A. (1993). Perceived self-efficacy in cognitive development and functioning. *Educational Psychologist, 28,* 117-148.

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

Butler, D. L. (1993). Promoting strategic learning by adults with learning disabilities: An alternative approach. Unpublished doctoral dissertation, Simon Fraser University, Burnaby, BC.

Butler, D. L. (1995). Promoting strategic learning by post secondary students with learning disabilities. *Journal of Learning Disabilities, 28,* 170-190.

Butler, D. L. (1998-a). A Strategic Content Learning approach to promoting self-regulated learning. In B. J. Zimmerman & D. Schunk (eds.), *Developing self-regulated learning: From teaching to self-reflective practice* (pp. 160-183). New York: Guildford Publications, Inc.

Butler, D. L. (1998-b). Metacognition and learning disabilities. In B. Y. L. Wong (ed.), *Learning about learning disabilities* (2nd ed.) (pp. 277-307). Toronto: Academic Press.

Butler, D. L. (1998-c). The strategic content learning approach to promoting self-regulated learning: A summary of three studies. *Journal of Educational Psychology, 90,* 682-697.

Butler, D. L., Jarvis, S., Beckingham, B., Novak, H., & Elaschuk, C. (2001, April). Teachers as Facilitators of Students' Strategic Performance: Promoting Academic Success by Secondary Students with Learning Difficulties. Presented at the annual meetings of the American Educational Research Association. Seattle, WA.

Butler, D.L., Elaschuk, C.L., Poole, S. (2000). Promoting strategic writing by postsecondary students with learning disabilities: A report of three case studies. *Learning Disabilities Quarterly, 23* (2), 196-213.

Butler, D. L., Elaschuk, C. L., Poole, S. L., Novak, H. J., Jarvis, S., & Beckingham, B. (2000, April). Investigating an Application of Strategic Content Learning: Promoting Strategy Development in Group Contexts. Presented at the annual meetings of the American Educational Research Association. New Orleans, LA.

Schunk, D. H. (1994). Self-regulation of self-efficacy and attributions in academic settings. In D. H. Schunk & B. J. Zimmerman (Eds.), Self-regulation of learning and performance: Issues and educational applications (pp. 75-99). Hillsdale, NJ: Erlbaum.

Wong, B. Y. L. (1991). The relevance of metacognition to learning disabilities. In B. Y. L. Wong (Ed.), *Learning about learning disabilities* (pp. 231-256). New York: Academic Press.