Running head: Reading Intervention

A Strategy Intervention to Increase the Reading Comprehension

of Junior High School Students with Reading Disabilities

Trudy G. Mothus and Judith C. Lapadat

University of Northern British Columbia

Author note.

Trudy G. Mothus, Education Program. Judith C. Lapadat, Education Program.

We thank the following colleagues for their helpful comments: Deborah L. Butler, Peter MacMillan, Judith A. Scott, and Bruno Zumbo.

Correspondence concerning this article should be addressed to Judith C. Lapadat, Northwest Regional Chair and Professor of Education, University of Northern British Columbia, Northwest Regional Campus, 4741 Park Avenue, Terrace, BC, Canada, V8G 1W2. E-mail: lapadat@unbc.ca.

Abstract

A challenge facing educators is to find ways to arrest and reverse the cumulative deficit in reading experienced by many students with learning disabilities. In this study, we evaluated the effect of a strategy intervention to increase the reading comprehension of eighth grade students with reading disabilities in intact junior high school classes ($\underline{N}$ = 98). Reading comprehension gains made by students taught a paraphrasing strategy (SIM) were compared to those of students who received conventional learning assistance (LA) and to a control group who participated in no extra intervention (No-LA). Over a year, the reading comprehension gains of students taught the paraphrasing strategy were significantly higher than those of students in LA, while attrition from the No-LA group was too high to prevent a valid comparison. Findings support the efficacy of using a strategy intervention to improve the reading comprehension of students with reading disabilities, and demonstrate that the intervention can be implemented effectively within the context of daily classroom instruction in a junior high school.

A Strategy Intervention to Increase the Reading Comprehension

of Junior High School Students with Reading Disabilities

Over the last few decades, educators and researchers have learned a great deal about reasons for students' low achievement in school, characteristics and consequences of learning disabilities (LD), interventions that promote academic success, and strategies to keep adolescents in school. However, effective implementation of instructional interventions remains limited in many schools for reasons of theoretical orientation, practicality, availability of resources, and systemic factors (Lenz, Ellis, & Scanlon, 1996). For example, once students enter junior high school, typically few resources are directed to assessing and intervening in reading, or teaching students strategies for reading across the curriculum (Ehren, 1994). The Rand Reading Study Group (RRSG), chaired by Catherine Snow, states in a recent draft report that "reading scores of high school students, as reported by the National Assessment of Educational Progress, have not improved over the last thirty years" (2001, p. 3). They point out that "reading comprehension instruction is often minimal or ineffective" (p. 3).

In this paper, we make the argument that, for many students, a language-based learning disability (LLD) (Wallach & Butler, 1994) lies at the core of their low achievement in school. A reading disability is one manifestation of an underlying LLD (Ehren, 1994). After entering junior high school, the negative consequences of reading difficulties are exacerbated by the complexity of the texts used and by the increasing degree to which students are expected to read as a primary means of gaining information (RRSG, 2001; Scott, 1994). We suggest that intervening to improve reading comprehension is an important way to improve these students' academic achievement in junior high school, and to reverse the pattern of discouragement and alienation from school as reflected by negative behaviors, absenteeism, and dropout. We present an empirical study evaluating the effectiveness of a strategy intervention to improve reading comprehension as compared to traditional learning assistance. Our approach was implemented in day-to-day instruction within a typical departmentalized Canadian junior high school.

Low Achievement, Dropout, and LLD

Researchers have found close relationships between reading disabilities and learning disabilities, between learning disabilities and low achievement, and between low achievement and dropout. However, there is a paucity of research tracing the relationship across all of these variables, particularly at the junior high school level. For example, McCaul, Donaldson, Coladarci, and Davis, (1992), who used the tenth grade data from the U.S. *High School and Beyond* data base of 600 dropouts and 2000 graduates who did not continue in post-secondary education, found that dropouts had significantly lower achievement scores than the graduates who did not continue their schooling after graduation. Half of all students who drop out of school may be categorized as having LD (Bender, 1995; Blackorby, Edgar, & Kortering, 1991; Deshler, Schumaker, & Lenz, 1984; Hasazi, Johnson, Hasazi, Gordon, & Hull 1989; Levin, Zigmond, & Birch, 1985; Mellard & Hazel, 1992; Tanner, Krahn, & Hartnagel, 1995). Bender (1995) estimates that this rate is actually conservative and predicts that LD dropout rates in schools without special programs may be higher.

Poor achievement of students is listed in the dropout literature as one of the major reasons of school failure (Barrington & Hendricks, 1989; Ponsford & Lapadat, 2001; Shaw, Cullen, McGuire, & Brinckerhoff, 1995; Trusty, & Dooley-Dickey, 1993). Students at risk for dropping out characteristically are identified by student-related factors such as low school achievement, poor social skills, deficient cognitive/academic skills, socio-behavioral problems, socio-economic factors, alienation from school, absenteeism, and dropout from school (Bender, 1995; Deshler, Schumaker, & Lenz, 1984; Schumaker, Alley, Warner, & Deshler, 1980; Shaw et al., 1995; Soodak & Podell, 1994; Stanovich, 1988; Tanner et al., 1995; Weber, 1994). Although Hallahan and Kauffman (1982) have called poor academic achievement the "hallmark" of learning disabilities (p. 115), little of this dropout research addresses a root achievement issue for students with learning disabilities – reading difficulties. Rather, most interventions for

dropout have centered on the attempt to change behavioral characteristics of students with learning disabilities (Blackorby et al., 1991).

Learning Disabilities and Reading Disabilities

In contrast to research on dropout, research on learning disabilities indicates reading disability and difficulty with reading comprehension – not just low achievement – to be among the main defining and most frequent characteristics of students with learning disabilities (Bender, 1995; Hallahan & Kauffman, 1982; Karlin, 1980; Lindsey & Kerlin, 1979; Norman & Zigmond, 1980; Rush & Vitale, 1994; Stanovich, 1988; Torgesen, 1988a, 1988b, 1989; Zigmond, Vallecorsa, & Leinhardt, 1990). Some researchers have estimated that 90% of all students classified as LD are reading disabled (Kaluger & Kolson, 1978; Levin et al., 1985). Most students who are classified as having LD are unable to read competently at grade level. Torgesen (1989) points out that a child who fails in reading will respond with inappropriate social behaviors in the classroom, truancy, lowered self-esteem, and school-leaving before grade twelve. Behavioral difficulties and absenteeism decrease opportunities to learn, initiating a downward spiral of behaviors, such as lesson evasion, leading to failure. Failure, in turn, may lead to decreased self esteem and even less productive achievement behaviors (Ciborowski, 1995; Hallahan & Kauffman, 1982; Lapadat, 1998; Torgesen, 1989; Vauras, Lehtinen, Olkinuora, & Salonen, 1993). It is often a reading and writing disability that is at the nucleus of poor achievement and, ultimately, school failure.

One reason that poor reading ability is likely to result in low achievement and academic failure is that children who have difficulty with reading also have difficulty acquiring domain-specific information via the reading process (Perfetti, 1984, 1986; Shaw et al., 1995; Torgesen, 1989). Bender's label for this is "cumulative deficit" (1995, p. 179; see also Chall, Jacobs, & Baldwin, 1990; Lapadat, 1991; Rose, Medway, Cantrell, & Marus, 1983). Students with learning or reading disabilities fall further behind each year by mastering perhaps only three-fourths of each year's content of instruction. At the entry to junior high school, students with LD tend to

have plateaued at the fourth or fifth grade level of reading, writing, and math skills (Alley & Deshler,1979; Bender, 1995; Chall et al., 1990; Deshler, Schumaker, & Lenz, 1984; Snow, Barnes, Chandler, Goodman, & Hemphill, 1991; Stanovich, 1988; White, 1992). These students, already reading two to five grade levels below their eighth grade placement, cannot independently read or comprehend assigned texts, and they lack strategies for coping with written materials (Schumaker & Deshler, 1984). Consequently, they cannot read to learn (Baker, Kameenui, Simmons, & Stahl, 1994; Chall et al., 1990). Lack of reading and writing achievement becomes a crucial issue once a student with learning, reading, or writing disabilities is faced with the complex demands of junior secondary school, where reading and writing at grade level are ranked as the top skills required for success.

Although the diagnosis of reading disability has been well researched and studied (Pelosi, 1981), and the consequences for self esteem, school achievement, and success in adulthood are becoming apparent (Gottesman, Bennett, Nathan, & Kelly, 1996), the implementation of effective interventions for reading difficulties continues to lag. In 1986, Cazden remarked: "We have explained educational failure without being able to show how to reverse it. The losers are not only the children but our social science" (p. 447). Fifteen years later, the Rand Reading Study Group describes many of the same issues. They call for "explicit instruction in reading comprehension" (2001, p. 6), and comment that "identification of children as learning disabled, without specific instructional treatments tailored to their individual needs, fails to generate reading comprehension gains" (p. 6). In particular, they describe a need to go beyond identifying instructional strategies that work in experimental settings to implementing teaching approaches on a large-scale basis (p. 7). Similarly, we believe that practical classroom approaches that serve to increase reading ability (and in particular, reading comprehension) of LLD students with reading disabilities will better prevent academic failure and consequent dropout than approaches that intervene in only socio-behavioral spheres.

Traditional Learning Assistance Interventions

Most high schools use a combination of tutorial, basic remediation, and compensatory learning assistance (LA) approaches to address the consequences of learning, reading, and writing disabilities (Bender, 1995; Alley & Deshler, 1979; Deshler, Schumaker, & Lenz, 1984). In the tutorial approach, students with LD obtain help from a learning assistance teacher to complete class assignments and prepare for course examinations in order to meet the requirements of core subjects. In the basic skills remediation approach, students obtain extra work from the LA teacher in order to remedy deficiencies in foundational skills deemed necessary for grade level learning. The compensatory approach involves the use of modifications and diverse formats to present information to the students. This may include use of audiotaped lessons and books, oral testing, charts of simplified text data, vocabulary sheets, and controlled reading levels on tests. The emphasis in all three of these approaches is to help students complete the assignments of the regular curriculum. Interventions that explicitly address reading deficits in order to improve reading competence rarely are attempted (Soodak & Podell, 1994). Instead, content mastery is the focus.

Deshler, Schumaker, Lenz, and Ellis (1984) and Clark (1993) found little empirical evidence that these three LA approaches were effective in increasing reading comprehension ability. Schumaker, Deshler, Alley, and Warner (1983), Clark (1993), and Gottesman (1979) found that students in LA programs demonstrated minimal achievement gains of 0.2 to 0.3, 0.6, and 0.4 grade levels a year respectively while in remedial instruction. Any achievement gain of less than one grade level per year is not enough for students in these programs to keep pace with their non-LD peers (Bender, 1995; Zigmond et al., 1990). Instead, these findings show that LD students continued to fall further behind in their level of reading comprehension.

Strategy Interventions

Strategy instruction is an alternative to traditional LA approaches. This intervention approach directly addresses students' difficulties in social skills, communication, behavior, study

skills, writing, and reading comprehension by teaching them to use strategies (Palincsar & Brown, 1987; Deshler, Schumaker, Lenz, & Ellis, 1984). Strategies are a set of skills and principles that enable students to solve problems independently, along with the decision-making rules that guide their selection and use. Lenz et al. (1996) define strategies as follows: "An individual's approach to a task is called a strategy when it includes how a person thinks and acts when planning, executing, and evaluating performance on a task and its outcomes" (p. 5). Thus, a strategy approach includes both cognitive and metacognitive elements.

The Strategies Intervention Model (SIM), developed by researchers at the University of Kansas, is based on the theory that students with LD have information processing difficulties, are strategy deficient, and are inactive learners. That is, they do not create or use appropriate cognitive and metacognitive strategies spontaneously to process information, to cope with problems they encounter, or to learn new material (Alley & Deshler, 1979; Bender, 1995; Clark, 1993; Deshler, Schumaker, Lenz, & Ellis, 1984; Ellis, Deshler, & Schumaker, 1989; Shaw et al., 1995; Palincsar & Brown, 1987; Torgesen, 1988a, 1988b). Rabren and Darch (1996) found that instead of using text-based strategies to comprehend a story, students with LD used less effective approaches such as getting parents to help, relying on existing prior knowledge, and rote memorization. They concluded that students with learning disabilities were not passive learners; rather, they actively used poor strategies for coping with text which led to less effective comprehension of text. Reynolds (2000) attributed the lower reading comprehension of poor readers to insufficient automatization of both basic and higher level strategic comprehension processes, which he in turn linked to having limited attentional resources and allocating those attentional resources inefficiently.

In contrast to tutorial, remedial, and compensatory approaches, the main focus of strategy intervention is not increased content knowledge, but rather, knowing how to learn. Through instruction in the Paraphrasing Strategy, a SIM strategy designed to improve reading comprehension, University of Kansas researchers found that students learn to acquire, retrieve,

manipulate, store, remember, and express academic content information in an organized and a systematic manner (Alley & Deshler, 1979; Deshler, Alley, Warner, & Schumaker, 1981; Deshler, Schumaker, Lenz, & Ellis, 1984; Shaw et al., 1995). In using the strategy, students engage and interact with information using inner language, or executive functioning (Bender, 1995). They develop metacognitively in that they learn how to think about problems and ways to solve them. The SIM focuses on teaching students *how* to learn as opposed to *what* to learn (Deshler et al., 1981).

The three steps of Schumaker, Denton, and Deshler's (1984) Paraphrasing Strategy are represented by the acronym "RAP": *Read* a paragraph; *Ask* what the main idea and important details are; and *Put* the main ideas and details in your own words. This explicit comprehension strategy, once mastered, enhances poor readers' understanding of textual materials. Students with reading disabilities are taught to generalize the strategy to curricular materials, thereby supporting their participation in mainstream classes.

Comparative research supports the claim that strategy instruction directly targeting reading problems may be a more effective way of helping reading disabled adolescents than traditional LA. In a review of reading comprehension intervention studies employing the SIM approach, Deshler and Schumaker (1993) report positive effects of Visual Imagery, Self-Questioning, and Multipass strategies on reading rates, notetaking, academic performance on class tasks, quiz performance, course grades, teacher perception of performance, achievement test scores, and reading comprehension. They also report on a Paraphrasing Strategy intervention in which students with LD who had been integrated into mainstream English classes maintained or exceeded their posttest scores on three of five reading measures. However, each of the studies they reviewed involved interventions of limited duration as well as small sample sizes. Most of these studies also reported on interventions conducted in restricted resource room settings rather than in naturalistic classrooms. The expanding body of programmatic research on the SIM

approach provides valuable guidance to teachers working with adolescents with LD; however, more efficacy data is needed (Wong, 1993, 1996).

Purpose

We think that, for many adolescents with LD, reading failure is a crucial variable in achievement failure and, therefore, needs to be addressed in the junior high school setting. Students must be able to read to learn in order to have successful educational experiences. Greater academic success may lead to greater satisfaction at school; improved motivation, behavior, and attendance; and ultimately, better career opportunities. Also, as the majority of students who drop out do so between grades seven and ten, intervention at this stage of schooling may be key in keeping students in school. Strategy interventions show promise as an approach that may enhance reading comprehension along with other aspects of achievement. In a climate of scarce resources, educators will be more likely to adopt strategy interventions as an alternative to LA if there is evidence that they both efficient and effective. Therefore, more research is needed to evaluate strategy interventions as applied in actual junior high school classrooms.

Our study compares the effectiveness of classroom-based strategy instruction and traditional learning assistance for low achieving eighth grade junior high school students with reading comprehension deficits. We hypothesized that a Strategies Intervention Model, employing the Paraphrasing Strategy based on the theoretical constructs and experimental work of Schumaker et al. (1984), would be more effective in ameliorating a reading disability than other traditional LA interventions. We theorized that if students learn techniques to cope with mainstream classroom text-based instruction, they will be more able to keep pace with their peers academically and will demonstrate fewer symptoms of discouragement and alienation from school. Our intent was to address what we believe is an important underlying cause of poor achievement for many students – reading disability.

Method

This study used information from the databases of two junior secondary schools. Data reported here include student pre- and post reading comprehension subtest scores as assessed by the *Stanford Diagnostic Reading Test (SDRT)* (Karlsen, Madden, & Gardner, 1976), attendance records, and course grades (both academic and work habit grades). We compared the reading comprehension gains of eighth grade poor readers who were taught the SIM Paraphrasing Strategy in intact classrooms for a full school year, to the reading comprehension gains of poor readers receiving resource room based learning assistance utilizing tutorial, compensatory, and remedial methods (the customary approach to intervention used in the school district). Reading gains of a control group of students whose elementary teachers had not recommended intervention despite low reading scores, or whose parents had opted for them to receive no intervention, also were used in the comparison. In addition to comparing the reading gains of the three groups, we also compared them on measures of absenteeism, behavior, and subject failure. Reading scores of the SIM intervention group were supplemented by qualitative observations compiled by the classroom teacher.

Participants

The students in this study were from a school district in the province of British Columbia, Canada. The district has a student population of approximately 20,000 students. Two junior secondary schools, enrolling grades eight to ten, and matched on socioeconomic factors, school size ($n = 500$), and student ethnicity, were used in the study. Both schools are located in the same small city, and serve mainly working-class neighbourhoods. In data collected by the provincial Ministry of Education, approximately ten percent of the students self-identified as Aboriginal, approximately ten percent were of East-Asian or Indo-Canadian extraction, and most of the rest were Caucasian. The number of students in eighth grade are approximately the same in each school, ranging from 150 to 180 students in any year.

All of the participants were enrolled in grade eight at the time of the data collection. Their ages ranged from 12.9 years to 14.2 years on entering grade eight. Of the participants, 27% were female, with no significant differences in gender ratio across the groups. Intelligence testing is not a normal practice in this school district, so IQ data were not available. None of the students in this study was classified by Ministry criteria as physically or mentally challenged. As LD is not a funded category of special need, formal criteria for identifying and labeling LD are not regularly applied in this district.

Participant Selection

This quasi-experimental pretest-posttest control group design study compared two interventions, the Strategies Intervention Model (SIM) and Learning Assistance (LA), to a no-intervention control group (No-LA), and included 98 students in all (SIM: $n = 33$; LA: $n = 34$; No-LA: $n = 31$). The SIM group combines data from eighth grade students enrolled in intact SIM intervention classes in School 1 in 1993-94 and 1994-95. Entry to the SIM class was determined by elementary teacher recommendation, reading and/or writing deficits identified through curriculum based assessment, and a score between the 5th and 37th percentile on the *SDRT* reading comprehension subtest. The LA group was formed by combining data from students enrolled in both schools during the 1995-1996 school year. In School 1, the SIM class was not offered in 1995-96 for administrative reasons; LA was provided instead. Similarly, LA students in School 2 would have qualified for SIM according to the criteria, but only LA was offered. The No-LA group was formed by combining data from students enrolled in both schools during the 1995-1996 school year. No-LA students met the criteria for SIM, but had not been recommended for extra intervention by their elementary school teachers, or they had opted to receive no intervention despite a recommendation. Based on their *SDRT* scores, students in this study were 1.4 - 4.9 grade equivalents below grade level in reading comprehension at the beginning of 8th grade. As we were using data from extant class assignments, random assignment to interventions in these schools was not a possibility.

SIM group in School 1. Normal SIM initial class size ranges from 24 to 27 students. Thirty-three SIM students for whom we had both pretest and posttest *SDRT* scores over the two years were included in the analysis. Despite some heterogeneity, all students had an identified reading and/or writing disability as measured by the *SDRT* and a curriculum-based narrative writing sample. Most students participating in the strategy intervention demonstrated word recognition and comprehension ability between the grade four to grade six level, indicating that, although limited, their basic reading vocabulary was adequate to learn the Paraphrasing Strategy. These students took the SIM class instead of French 8. The students' remaining coursework consisted of the regular eighth grade curriculum in inclusive classrooms.

The SIM classes were taught by two special education teachers in a team teaching model. One was the first author of this study and the other was the school LA teacher. Neither teacher knew that data from these students would be analysed for the purpose of this study at the time of the strategy intervention. Both teachers took equal responsibility for class management, lesson planning, and instruction. The first author took a principal role in managing and teaching the SIM curriculum, whereas the LA teacher had the major responsibility for the writing component of the curriculum.

LA group in Schools 1 and 2. During the 1995-1996 school year, a group of students (*n* = 34) from the two schools were identified by the same criteria as used for identifying the SIM groups. In place of French 8, they participated in an LA class that combined tutorial, basic skills remediation, and compensatory approaches in a resource room model. The LA classes were taught by four LA teachers, two in each school. Class size in the LA room did not exceed nine students per class. The LA teachers used adapted materials and tests to help these adolescents attain competency in content-based materials and prepare for tests. This included provision of simplified vocabulary sheets of subject content information as a tutoring device. Tests, in social studies and science for example, were rewritten with adjusted vocabulary levels or provided orally. Students received remedial instruction in comprehension, spelling, grammar, punctuation,

and narrative and descriptive writing, using worksheets from publishing companies. They were given tutorial assistance with their homework assignments. Also, study skills, organizational skills, and test taking skills were addressed.

No-LA group in Schools 1 and 2. The No-LA group consisted of students in the two schools who were not given LA during grade 8 (1995-1996; $n = 31$). Although these students demonstrated similar deficits in reading comprehension ability according to the *SDRT* as the SIM and LA groups, the No-LA students received no extra intervention. The membership of the No-LA group was determined post hoc solely through standardized reading test scores in the database; it included those eighth grade students in the regular program who obtained a *SDRT* pretest score between the 5th and the 37th percentile, but whose elementary teachers did not recommend them for LA, or who chose not to enroll in LA despite an LA recommendation. Their program consisted of inclusive regular class placements and curricula.

Data excluded from analysis. In all three groups (SIM, LA, and No-LA), we included all data from all students for whom we had both pre- and posttest *SDRT* data, except for 1 SIM student who was diagnosed as intellectually challenged subsequent to placement in the SIM class, and 2 LA and 6 No-LA students in School 2 whose *SDRT* test scores were unreliable or invalid (test forms were spoiled or not complete). However, the study *n*s are smaller than the number of students who actually received SIM or LA intervention, or who were identified for the No-LA control group, because of absenteeism on the posttest date, mid-year transfers to other schools, and drop-out. In particular, there was a high rate of attrition from the No-LA group.

Supplementary data from subsequent years. We report pre- and posttest scores schoolwide and for SIM students in School 1 for three years subsequent to the comparison data analysed in this study. Equivalent data were not available for LA and No-LA comparison groups in these years. Because of curricular and administrative changes[1], these cohorts are not directly comparable to the SIM, LA, and No-LA groups that we analyzed so we have not incorporated

these data into the comparisons. However, such longitudinal data may indicate the degree of robustness of an intervention better than cross-sectional data alone.

Procedures, Measures, and Materials

Stanford Diagnostic Reading Test. Along with forms of curriculum based assessment, the reading comprehension subtest of the *SDRT* is used routinely in School 1, the strategy treatment school, to measure reading comprehension levels of all the eighth grade students. The test is administered twice a year, once in June of the students' grade seven year and a second time in May-June of grade eight. The *SDRT* is used to identify those students with the lowest reading comprehension achievement scores (stanines 1 to 4) so that appropriate interventions can be implemented. Standardized achievement assessment of the eighth grade population is not a standard practice in the district, however. The eighth grade students in School 2 were tested only for this study, once in June, 1995 and again in May, 1996.

The Paraphrasing Strategy. Materials for the SIM treatment group consisted of the Paraphrasing Strategy curriculum of Schumaker et al.'s (1984) Strategy Intervention Model. The strategy intervention took place in a classroom setting for a full year, as contrasted with using a resource room setting, as has been typical in prior research. The SIM students met with the two special education teachers team-teaching the class every second school day for 55 minutes.

Instructional procedures outlined in *The Paraphrasing Strategy* manual (Schumaker et al., 1984) were followed for the lessons in the first 20 weeks of the school year, with some adaptations as described below. Using the RAP acronym (Read, Ask, Put), students were taught to read to look for the main idea of paragraphs, to ask questions to find supporting details for the main idea, and to write out the main idea and details in their own words (see also Sjostrom & Hare, 1984; Williams, 1988). Students first practiced the RAP strategy on ten ability-level narrative and expository texts written at the students' mean grade five reading level.

The first five of these stories/texts were read aloud twice to the students. This listening training is an adaptation of the Paraphrasing Strategy, and it was introduced for three reasons.

First, students' listening vocabulary is greater than their reading vocabulary. Therefore, while students were first learning to RAP information by looking for main ideas and details, their processing capacity was not being overloaded by the requirement of also decoding words (Chall et al., 1990). Second, students had to learn to make one- or two- keyword notations in the margins of the RAP sheet to remember details and what the paragraph was about. This encouraged one-word notetaking strategies using keywords. Outlining and notetaking, common requirements expected of students by high school teachers (Bianco & McCormick, 1989), was taught incidentally in this manner. Third, this method ensured that students paraphrased but did not copy the text since they could not memorize paragraphs verbatim. Cognitive interaction with text was encouraged by this means; the students could not remain passive in their relationship with the text. Students also had opportunities to discuss the content of paragraphs with a partner.

The next five stories were shown to the students using an overhead projector, also an adaptation, so that students could follow along with the reading while the teacher drew their attention to paragraphs in the stories. This was intended to teach the students to transcribe ideas without copying or plagiarizing. Also, the students were taught paragraph structure using this process. Finally, the students could refer to projected paragraphs to check spelling.

The second ten expository texts and stories were written at the students' grade level (grade 8) rather than at their below-grade reading level. These also were presented on the overhead projector. Reading materials for these 20 lessons included selections from *Science Research Associates: Individualized Reading Skills Program* (1970) - Orange (grade 4) and Blue (grade 8) Level reading series (now out of print), as well as texts from the students' core classes, other approved textbooks, and library books such as encyclopaedias and reference books. Students also were taught to RAP informational and documentary videos (see Appendices A and B for an example).[2] Generalization of the Paraphrasing Strategy learned in the intervention class was promoted by the Humanities teacher, who encouraged students to use RAP to make notes in English and Social Studies.

The writing strategy. A teacher-created remedial writing program based on the Paraphrasing Strategy model and procedures was used to teach paragraph and essay writing during the second 20 weeks of the school year. The writing strategy, PAR, is essentially the RAP strategy in reverse. It follows upon a brainstorming session of ideas on a topic of interest to the students or a curricular topic: *Put* all the ideas into categories; *Ask* yourself, what is the main idea and what are the details of the category; and *Record* the main idea and details in a paragraph using your own words. In this way, the techniques of the Paraphrasing Strategy were used as an intervention to improve both reading and writing (Mothus, 2001). The strategy is kept simple, as recommended by Ellis et al. (1989), as the less complex the approach, the better students will learn and use it (Anderson & Roit, 1993). Therefore, one basic strategy was taught and students were shown how to adapt it to promote reading comprehension, take notes, and compose essays (See example in Appendix C).

Using both RAP and PAR, the students were taught to paraphrase the stories and curricular materials that they read, rewriting them into essays of varying lengths. They were encouraged to add their own prior knowledge to each paragraph, as well as to RAP increasingly complex and difficult articles from encyclopaedias and reference books and add the information from these sources to their essays. Essay structure was explicitly taught and practiced. Students were taught to write an introductory paragraph outlining what the essay was about and to compose an interesting topic sentence or thesis statement. The RAP content constituted the body of the essay. They were taught to add a concluding paragraph in which they summarized main points, expressed their opinion about the topic, and added a question of interest to which they would like to know the answer. These questions led to further research and essay writing using library books. The students eventually wrote an essay for their Social Studies or Science class using library information which was accepted for credit by their teacher.

Results

Our main purpose in this study was to evaluate the effectiveness of our strategy intervention. We asked: When LD adolescents with reading disabilities are taught to use the SIM Paraphrasing Strategy, what are the effects on their reading comprehension, and how do their reading comprehension gains compare with those of LD students who have received traditional LA intervention, and to a control group of students with LD who received no specialized intervention? We also compared the absenteeism, behavior, and subject failure rate of students with reading disabilities who received SIM strategy instruction with that of those who received LA instruction or No-LA.

Analysis of the Independent Variables

Reading comprehension data, consisting of *SDRT* mean raw scores, standard deviation scores, and grade equivalent scores were calculated for the total grade eight populations of both schools at pretest (June of seventh grade) and posttest (May/June of eighth grade) (see Table 1). The data of students who moved to or from the school midyear or dropped out were not included in the whole-school mean. Mean pretest scores on the *SDRT* indicate that the students entering grade eight in Schools 1 and 2 in 1995-96 can be considered to come from similar populations (see Table 1).

_____

Insert Table 1 about here

_____

Pretest scores of study participants were normally distributed (see Table 2). The alpha level for all analyses was set at .05. A 6 X 1 (group by pretest score) ANOVA on the pretest scores of the uncombined SIM (1993-94 and 1994-95), LA (1995-96 in School 1 and School 2), and No-LA (1995-96 in School 1 and School 2), groups showed no significant differences (F (5, 92) = 2.06, $p \leq$ .08). These data were combined to form three groups (SIM, LA, and No-LA) for the remainder of the analyses. Two-tailed t-tests of the *SDRT* pretest scores of the SIM and LA, the SIM and No-LA, and the LA and No-LA groups ($t = 0.13$, $p \leq .90$; $t = 0.07$, $p \leq .95$; and $t =$

0.19, $p \leq .85$ respectively) also revealed no significant differences in initial reading levels.

Therefore these groups of students could be assumed to come from a similar population.

_____

Insert Table 2 about here

_____

Comparative Analysis of Interventions as Measured by the SDRT

Gain (change) scores in reading comprehension achievement on the *SDRT* were used to compare the effectiveness of the SIM and LA interventions in improving reading comprehension, as contrasted with the No-LA control group. Gain scores were calculated by subtracting the raw pretest score from the raw posttest score of each student. Therefore, a positive gain score reflects an increase in reading comprehension[3].

Table 3 shows the mean gain scores of each group of students in the study, as well as the range of gain scores, and the mean difference scores in grade equivalents. A 3X1 ANOVA (group by gain score) on the gain scores of the SIM, LA, and no-LA groups indicated that a significant difference existed in the three treatment groups' reading comprehension gain scores ($F (2, 95) = 3.86$, $p \leq .02$). The SIM group was found to be different from the LA group ($t = 2.63$, $p \leq .01$); they made significantly greater gains in reading comprehension. The SIM group was not significantly different from the No-LA group ($t = 1.42$, $p \leq .16$). Nor were the LA and No-LA groups found to differ significantly in gain scores ($t = 1.40$, $p \leq .17$). However, the No-LA gain score may be affected by the selective attrition of 10 No-LA students in School 1 who had especially low pretest scores (Mean Raw Score $= 31$, Mean *GE* $= 4.9$), thus inflating the average No-LA gain score, and limiting the conclusions we can draw about the no-intervention control group.

_____

Insert Table 3 about here

_____

To test the magnitude of the difference in gain scores for the SIM, LA, and No-LA groups, effect size of the raw *SDRT* pretest to posttest scores using Cohen's *d* was calculated for the SIM group (d = 1.07), the LA group (d = 0.43), and the No-LA group (d = 0.87). Reading comprehension improved by more than one standard deviation for the SIM group but not for the LA and No-LA groups. In comparison, effect sizes for the grade 8 school populations were: 1993-94 School 1 (d = 0.28), 1994-95 School 1 (d = 0.34), 1995-96 School 1 (d = 0.33), and 1995-96 School 2 (d = 0.43).

Measures of Alienation and Academic Failure

In order to examine our secondary hypotheses that reading disability is related to alienation from school, as indicated by absenteeism and negative behaviors, and to wider academic failure, we calculated rate of absenteeism, teacher-assigned behavior scores, and failure rate in school subjects for each of the three groups (see Table 4). A 3X1 ANOVA (group by days absent) of the SIM, LA, and No-LA groups showed a significant difference in absenteeism between the three groups (F (2, 95) = 3.74, $p \leq$ .03). Pairwise t-tests showed a significant difference in school attendance between the LA and No-LA groups, with the LA students absent more (t = 2.65, $p \leq$ .01). There were no significant differences in attendance between the SIM and LA groups (t = 1.86, $p \leq$ .07), or the SIM and No-LA groups (t = 0.70, $p \leq$ 0.49). The mean number of days missed by SIM and No-LA students (M = 9.7 and 8.4 days respectively) is comparable with the grade 8 schoolwide average absenteeism calculated for School 1 in 1995-96 (M = 9.3; SD = 8.2), whereas the mean number of days missed by LA students was 14.0.

_____

Insert Table 4 about here

_____

We speculated that frequent absence might have had a negative impact on reading gain scores. To check this, we compared the reading comprehension gain scores of frequent attenders (absent 13 or fewer days per year) with those of low attenders (absent 14 or more days per year) in each group, but found no significant difference in gain scores in any group.

To assess behavior, we used teacher-assigned work habit marks. For each of eight subjects taken, students received a work habits mark in each of two reporting periods, for a total of 16 in the year. We assigned numerical values to the descriptors "Good" (G), "Satisfactory" (S), and "Unsatisfactory" (U) as follows: G = 2, S = 1, and U = 0. Summed across reports, the possible behavior score ranged from 0 (extremely poor behavior) to 32 (excellent behavior). A 3X1 ANOVA (group by behavior) revealed no significant differences in the mean behavior scores of the groups (F (2, 95) = 1.61, $p \leq .20$). Comparable schoolwide data on behavior were not available.

To examine the hypothesis that reading disability is related to academic failure, we compared entry reading level, as measured by the $SDRT$ pretest, and success in passing courses of all students attending 8th grade in School 1 in 1995-96 (see Table 5). Eighty-eight percent of students with low reading comprehension scores on entering 8th grade ($SDRT$ scores at the 25th percentile or below; $GE \leq 6.1$) failed one or more of eight subjects taken that year. Thirty-nine percent of students entering with low average reading comprehension ($SDRT$ scores between 26th and 39th percentile; $GE = 6.3 - 7.5$) failed one or more courses in grade 8. In comparison, only 12 percent of students whose reading comprehension was average or above ($SDRT$ scores at or above the 40th percentile; $GE \geq 7.6$) failed courses in grade 8.

_____

Insert Table 5 about here

_____

Finally, using regression analysis, we examined the role of initial reading comprehension, absenteeism, behavior, and reading comprehension gains as predictors of the LD students' academic achievement. Based on a partial correlation analysis indicating that the variables correlated at low to moderate levels, regression analysis was deemed appropriate (Tabachnick & Fidell, 1996). To determine whether subject failure rates of the SIM, LA, and No-LA students ($n = 98$) could be predicted from the independent variables in this study, the regression was run using the subject failure data as the dependent variable and the absenteeism rate, behavior scores, *SDRT* pretest scores, and reading comprehension gain scores as independent variables (see Table 6). Plots of predicted values of the dependent variable against the residuals showed normality, linearity, homoscedasticity, and independence of residuals. Behavior, absenteeism, and reading pretest scores were predictive of these students' failure to achieve in school ($p \leq .01$). Reading comprehension gain scores, on the other hand, were found not to have a significant association with failure to achieve. Together, these four variables accounted for over half of the variance in school subject failure rate ($R^2 = .58$; $p \leq .05$).

_____

Insert Table 6 about here

_____

Discussion

The principal thesis of this study was that the students with reading disabilities who participated in the Paraphrasing Strategy intervention (SIM) would show greater gains in reading comprehension than those who participated in learning assistance intervention (LA) or those who were enrolled in a regular program without intervention (No-LA). The strategy intervention group (1993-95) showed a change in grade equivalent of 1.3 years over one year as compared to changes in grade equivalent of 0.5 for the LA and 0.9 for the No-LA students in reading comprehension; and schoolwide changes in grade equivalent of 0.8, 1.1, and 0.7 (in School 1 for 1993-94, 1994-95, and 1995-96 respectively) and 0.8 (in School 2 for 1995-96). The SIM gains were significantly greater than the LA gains, although the No-LA gains were not significantly

different from the other two groups. SIM classes in subsequent years have shown similar gains, as represented by changes in grade equivalent scores of 1.2, 1.9, and 1.5 years (in 1996-97, 1997-98, and 1999-00 respectively), in contrast to changes in schoolwide grade equivalent scores of 0.7, 0.5, and 0.5 in the same years. We believe that such improvements in reading comprehension may begin to redress the cumulative deficit experienced by these students, and we are cautiously optimistic about the role of strategy intervention as a factor in improving the students' reading.

Secondary hypotheses addressed the roles of absenteeism, behavior, and subject failure. We asked whether SIM, LA, and No-LA groups differed from each other in these indicators of alienation and school failure. Where data were available, we also compared the three study groups with schoolwide populations on these indicators. No significant difference in attendance rate and behavior between SIM and LA students was found, indicating that the SIM students' greater gains in reading comprehension could not be attributed to differences in absenteeism or behavior. However, LA students were absent more than No-LA students, a finding that we interpret as likely due to selective attrition of No-LA students from the sample (that is, rather than just skipping out, many of the least successful No-LA students dropped out). Furthermore, in 1995-96, students with reading disabilities failed more of their eighth grade courses than the schoolwide average, with the poorest readers failing most. Also, across all of the study participants, absenteeism, behavior, and reading scores in combination accounted for over half of the variance in subject failure, confirming the status of these poor readers as being at risk for failing, a precursor for dropping down or dropping out.

These findings suggest that reading disability may, in part, predict school alienation and academic failure. These results are particularly telling given that, due to limitations in our being able to access detailed school records retrospectively, we omitted from the analyses all of the data of transient students who transferred in, moved away, or dropped out during the school years under study, as well as the data of students who were absent on the posttest date. Transient

and truant students are those who are especially at risk. Yet, even omitting those most at-risk students, the implications of having a reading disability on entry to junior high school were clear.

These findings suggest that, even as late in these students' school careers as eighth grade, strategy instruction may provide an effective way to improve reading comprehension. What these data do not show, and therefore needs further study, is whether, over time, improvements in reading comprehension will yield differences in these LD students' academic achievement and willingness to stay in school.

Contributions of this Study

The results of this study support the argument that in order to achieve academically at school, as represented by success in content area subjects, students must be competent at reading. The U.S. National Assessment of Educational Progress (1992) reading achievement data indicate, as we also found, that 31% of eighth graders read below an acceptably proficient level (cited in Baker et al., 1994), and the recent draft report of the Rand Reading Study Group (2001) confirms that reading levels of high school students in the U.S.A. are not improving. According to Chall et al. (1990), students cannot meet the requirements of a curriculum that is written two years or more beyond their reading comprehension level. In fact, students who read only one year below grade level will experience difficulty with the reading level of most curricular texts. Many of these students who show reading deficiencies fail to achieve curricular success, tend to behave in a fashion that does not lead to school success, absent themselves from school, and may go on to drop down and out of school.

Commonly used interventions to reduce failure to achieve and dropout behavior have included attempts to improve attendance behaviors and to resolve behavioral difficulties of low-achieving students, yet failure to achieve and dropout rates remain high. The inability to effectively remediate many students' school achievement difficulties may be due to the fact that the underlying problem, a reading disability, often is neither identified (Soodak & Podell,

1994), nor adequately treated (RRSG, 2001). Our study suggests that junior high school students with reading disabilities can make significant improvements in reading comprehension with a classroom-based strategy instruction approach to intervention. In contrast to most other empirical studies reported in the literature, this study represents a year-long intervention based in a real context for most students – the regular classroom. Therefore, our results support and extend earlier work documenting strategy interventions that were of limited scope or duration, or that were conducted in alternative settings.

The positive outcome of the the strategy intervention can be explained by a number of factors, including characteristics of the nature of instruction itself, as well as systemic aspects of its implementation. With respect to characteristics of the strategy instruction, SIM students were taught a flexible strategy for gaining meaning from text while reading. They began learning the strategy using text written at their reading level, and were provided scaffolding to apply the same strategy to text written at grade level. They were given many opportunities to practice the strategy. Thus students spent much more time engaged in reading and in successfully comprehending what they read than they would have without this intervention. They also learned how to adapt the strategy to related tasks and contexts including: listening, reading different text genres, viewing movies and documentaries critically, and composing expository writing. Finally, we believe that classroom management and communication approaches used by the team teachers were important in creating a positive classroom climate, along with a level of behavioral support and achievement expectations that motivated the students to try (McWhirter, McWhirter, McWhirter, & McWhirter, 1998).

Systemically, students were encouraged, with the assistance of some teachers of other subject areas, to apply the reading comprehension and writing strategies they had learned to texts and writing tasks in other curricular areas. As SIM students participated in regular inclusive programming in their other seven subjects, they experienced the social and academic benefits of inclusion, along with the support of explicit intervention targeted to remediating their

identified reading disability. A number of instructional, classroom, and school variables in combination create an effective learning environment, and may be important in the successful implementation of strategy instruction (Mothus, Lapadat, Struthers, Fisher, & Paterson, 2002; Lapadat, Mothus, & Fisher, 2002).

Limitations of the Study

This study has several limitations. As we were comparing extant data from school databases, we did not have the opportunity to use random assignment to conditions, to administer a range of tests, or to conduct follow-up testing of absent students. We included two comparable schools to obtain sufficient data; however, our access to School 2 was limited to the 1995-96 school year. Also, practices in School 2 differed somewhat in that School 2 did not routinely offer the SIM option or use standardized assessments to help determine intervention needs. Rather than relying primarily on the *SDRT*, we would have preferred to have used a variety of tests in combination with observational and curricular assessments of reading and writing for pre- and post assessment, and rich description of instructional processes. Finally, Our No-LA group had flaws as a control group; there was high attrtrition of the lowest-scoring students, and we cannot rule out that these students who were not recommended for intervention or who were recommended but did not enroll were different than the SIM and LA groups.

Conclusion

In this study, we evaluated two school programs designed to prevent student achievement failure – a Strategy Intervention Model class that employed the Paraphrasing Strategy to improve reading comprehension, and the typical learning assistance class. Our findings have important practical as well as theoretical implications. Our results are consistent with the perspective that reading difficulties are predictive of low achievement in junior high school; support the claim that strategy intervention can effectively improve reading comprehension; and suggest that SIM might be a more effective intervention than traditional learning assistance in the two schools in the study. A powerful point in favour of the strategy intervention is that it

appeared to increase the reading comprehension of the students in the SIM class regardless of absenteeism or behavioral problems.

We believe that many students who do not overcome a cumulative reading deficit will fall further behind and may potentially drop out of school due to the disparity between their ability to read with comprehension and the difficult reading requirements of the regular curriculum. A multiple regression analysis using subject failure rate as the predicted variable found that poor behavior, high absenteeism, and low *SDRT* pretest scores were predictive of subject failure. In one school in our study, 88% of students in 1995-96 who had low reading comprehension failed one or more subjects in eighth grade. Further longitudinal research is needed to determine whether ongoing strategy intervention for reading comprehension has the potential to reverse such students' cumulative reading deficits or achievement difficulties (Torgesen, Alexander, Wagner, Rashotte, Voeller, & Conway, 2001).

This study is one of few naturalistic, multi-year evaluations that have compared strategy intervention to learning assistance. The findings as well as the limitations of this study point to a number of directions for further investigation. Strategy intervention improved the reading comprehension of these eighth grade students with LD. However, we need to investigate whether such reading comprehension gains will make a difference in LD students' academic achievement or their likelihood of staying in school over time. Students with reading disabilities should be followed to senior high school to determine the effect of the SIM strategy intervention on their retention in school and academic success. A limitation of the current study is that data from transient students were not included, yet such students may be especially at-risk.

We need to do further research to determine why the strategy intervention worked. One theoretical rationale for implementing SIM was that direct remediation of reading comprehension intervenes at the root of the problem. A reason for using a strategy intervention approach rather than other forms of remediating reading, is that strategy instruction incorporates cognitive and metacognitive elements, thus directly teaching skills, principles, and decision-

making rules. Thus, students learn how to learn. However, we now think that success of the strategy intervention may additionally rest in a whole complex of instructional and contextual factors. For example, the social and behavioral supports embedded in the SIM class, and the holistic integration of language and literacy elements also may have been important contibutors to the intervention's success (Reid & Stone, 1991). Our most recent study in progress investigates this. Also, it will be important to compare the gains of our eighth grade students with LD with what might be achieved in other classrooms and schools, with other teachers, and in other grades.

How can our SIM intervention be improved? Within the existing approach to SIM classroom instruction, we would like to examine the writing strategy that is taught in parallel with the Paraphrasing Strategy, as we think that RAP and PAR may be mutually supportive. An area that we believe could be enhanced is that of student ownership of strategy use. Students need to learn to self-regulate their use of reading and writing strategies, so that over time their reliance on teacher-provided supports decreases.

We think there is a need for more systemic support for students with LD in these schools. Ideally, reading and writing strategies such as the ones introduced in the grade eight SIM class should be taught to students with reading disabilities long before eighth grade. Also, schoolwide support for SIM students to apply their reading and writing strategies across the curriculum would help these students learn to generalize the skills, and also to see the value of the strategies for their wider academic achievement. This would require subject specialists to "buy in," yet in practice, many teachers at junior high schools lack knowledge about reading disabilities and effective interventions for them, or see reading instruction as outside of their disciplinary area. Finally, intervening in grade eight, although important, is not sufficient. Ongoing support in subsequent years of schooling will be important to maintain and capitalize on the initial gains we have documented here.

References

Alley, G. R., & Deshler, D. D. (1979). *Teaching the learning disabled adolescent: Strategies and methods*. Denver: Love Publishing Company.

Anderson, V., & Roit, M. (1993). Planning and implementing collaborative strategy instruction for delayed readers in grades 6-10. *The Elementary School Journal, 94*, 121-137.

Baker, S. K., Kameenui, E. J., Simmons, D. C., & Stahl, S. A. (1994). Beginning reading: Educational tools for diverse learners. *School Psychology Review, 23*, 372-391.

Barrington, B. L., & Hendricks, B. (1989). Differentiating characteristics of high school graduates, dropouts, and nongraduates. *Journal of Educational Research, 82*, 309-319.

Bender, W. N. (1995). *Learning disabilities: Characteristics, identification, and teaching strategies* (2nd ed.). Boston: Allyn & Bacon.

Bianco, L., & McCormick, S. (1989). Analysis of effects of a reading study skill program for high school learning-disabled students. *Journal of Educational Research, 82*, 282-288.

Blackorby, J., Edgar, E., & Kortering, L. J. (1991). A third of our youth? A look at the problem of high school dropout among students with mild handicaps. *The Journal of Special Education, 25*, 102-113.

Cazden, C. B. (1986). Classroom discourse. In M. C. Wittrock (Ed.), *Handbook of research on teaching* (3rd ed.; pp. 432-463). New York: Macmillan.

Chall, J. S., Jacobs, V. A., & Baldwin, L. E. (1990). *The reading crisis: Why poor children fall behind*. Cambridge, MA: Harvard University Press.

Ciborowski, J. (1995). Using textbooks with students who cannot read them. *Remedial and Special Education, 16*(2), 90-101.

Clark, F. L. (1993). Preparing teachers to implement strategy instruction. *Preventing School Failure, 38*(1), 50-52.

Deshler, D. D., Alley, G. R., Warner, M. M., & Schumaker, J. B. (1981). Instructional practices for promoting skill acquisition and generalization in severely learning disabled adolescents. *Learning Disability Quarterly, 4*, 415-421.

Deshler, D. D. & Schumaker, J. B. (1993). Strategy mastery by at-risk students: Not a simple matter. *The Elementary School Journal, 94*, 153-167.

Deshler, D. D., Schumaker, J. B., & Lenz, B. K. (1984). Academic and cognitive interventions for LD adolescents: Part I. *Journal of Learning Disabilities, 17*, 108-117.

Deshler, D. D., Schumaker, J. B., Lenz, B. K., & Ellis, E. (1984). Academic and cognitive interventions for LD adolescents: Part II. *Journal of Learning Disabilities, 17*, 170-179.

Ehren, B. J. (1994). New directions in meeting the academic needs of adolescents with language learning disabilities. In G. P. Wallach & K. G. Butler (Eds.), *Language learning disabilities in school-age children and adolescents: Some principles and applications* (pp. 393-417). New York: Macmillan.

Ellis, E. S., Deshler, D. D., & Schumaker, J. B. (1989). Teaching adolescents with learning disabilities to generate and use task-specific strategies. *Journal of Learning Disabilities, 22*, 108-119.

Gottesman, R. T. (1979). Follow-up of LD children. *Learning Disability Quarterly, 2*, 60-69.

Gottesman, R. L., Bennett, R. E., Nathan, R. G., & Kelly, M. S. (1996). Inner-city adults with severe reading difficulties: A closer look. *Journal of Learning Disabilities, 29*, 589-597.

Hallahan, D. P., & Kauffman, J. M. (1982). *Exceptional children: Introduction to Special education* (2nd ed.). Englewood Cliffs: Prentice-Hall.

Hasazi, S. B., Johnson, R. E., Hasazi, J. E., Gordon, L. R., & Hull, M. (1989). Employment of youth with and without handicaps following high school: Outcomes and correlates. *The Journal of Special Education, 23*, 243-254.

Kaluger, G., & Kolson, C. J. (1978). *Reading and learning disabilities* (2nd ed.). Columbus, OH: Merrill.

Karlin, R. (1980). *Teaching elementary reading: Principles and strategies* (3rd ed.). New York:

    Harcourt Brace Jovanovich.

Karlsen, B., Madden, R., & Gardner, E. F. (1976). *Stanford Diagnostic Reading Test*. New York:

    Harcourt Brace Jovanovich.

Lapadat, J. C. (1991). Pragmatic language skills of students with language and/or learning disabilities:

    A quantitative synthesis. *Journal of Learning Disabilities, 24*, 147-158.

Lapadat, J. C. (1998). Implicit theories and stigmatizing labels. *Journal of College Reading and*

    Learning, 29, 73-81.

Lapadat, J. C., Mothus, T. G., & Fisher, H. (2002. July). *The contextual embeddedness of writing*

    strategy instruction: Classroom observations from diverse points of view. Paper presented at the

    International Conference on the Portraits of Literacy: Critical Issues in Family, Community, and

    School Literacies, Vancouver, BC, Canada.

Lenz, B. K., Ellis, E. S., & Scanlon, D. (1996). *Teaching learning strategies to adolescents and adults*

    with learning disabilities. Austin, TX: Pro-Ed.

Levin, E. K., Zigmond, N., & Birch, J. W. (1985). A follow-up study of 52 learning disabled

    adolescents. *Journal of Learning Disabilities, 18*, 2-7.

Lindsey, J. D., & Kerlin, M. A. (1979). Learning disabilities and reading disorders: A brief review of

    the secondary level literature. *Journal of Learning Disabilities, 12*, 408-412.

McCaul, E. J., Donaldson, Jr. G. A., Coladarci, R., & Davis, W. E. (1992). Consequences of dropping

    out of school: Findings from high school and beyond. *Journal of Educational Research, 85*, 198-

    207.

McWhirter, J. J., McWhirter, B. T., McWhirter, A. M., & McWhirter, E. H. (1998). *At-risk youth: A*

    comprehensive response (2nd ed.). Pacific Grove, CA: Brooks/Cole.

Mellard, D. F., & Hazel, J. S. (1992). Social competencies as a pathway to successful life transitions.

    Learning Disability Quarterly, 15, 251-271.

Mothus, T. G. (2001, February). *Writing successfully: Writing strategies for high school students with writing disabilities.* Paper presented at the British Columbia Ministry of Education Sponsored Education Research Symposium, Vancouver, BC, Canada.

Mothus, T. G., Lapadat, J. C., Struthers, L., Fisher, H., Paterson, K. (2002, March). *Strategic interventions to improve the writing of adolescents with language-based learning disabilities.* Paper presented at the British Columbia Ministry of Education Sponsored Education Research Symposium, Vancouver, BC, Canada.

Norman, C., & Zigmond, N. (1980). Characteristics of children labeled and served as learning disabled in school systems affiliated with child service demonstration centers. *Journal of Learning Disabilities, 13*, 16-21.

Palincsar, A. S., & Brown, D. A. (1987). Enhancing instructional time through attention to metacognition. *Journal of Learning Disabilities, 20*, 66-75.

Pelosi, P. L. (1981). The disabled reader in years past. *Journal of Research and Development in Education, 14*(4), 1-10.

Perfetti, C. A. (1984). Some reflections on learning and not learning to read. *Remedial and Special Education, 5*(3), 34-38.

Perfetti, C. A. (1986). Continuities in reading acquisition, reading skill and reading ability. *Remedial and Special Education, 7*(1), 11-21.

Ponsford, K. R., & Lapadat, J. C. (2001). Academically capable students who are failing in high school: Perceptions about achievement. *Canadian Journal of Counselling, 35*, 137-156.

Rabren, K., & Darch, C. (1996). The strategic comprehension behavior of students with learning disabilities and general education students: Teachers' and students' perspectives. *Journal of Research and Development in Education, 29*(3), 172-180.

RAND Reading Study Group (2001, January). *Reading for understanding: Towards an R&D program in reading comprehension (Draft)* (Prepared for the Office of Educational Research and

Improvement, US Department of Education). [On-line], Available:

http://www.rand.org/multi/achievementforall/reading.

Reid, D. K., & Stone, C. A. (1991). Why is cognitive instruction effective? Underlying learning

mechanisms. *Remedial and Special Education, 12*(3), 8-19.

Reynolds, R. E, (2000). Attentional resource emanicipation: Toward understanding the interaction of

word identification and comprehension processes in reading. *Scientific Studies in Reading, 4*,

169-195.

Rose, J. S., Medway, F. J., Cantrell, V. L., & Marus, S. H. (1983). A fresh look at the retention-

promotion controversy. *Journal of School Psychology, 21*, 201-211.

Rush, S., & Vitale, P. A. (1994). Analysis for determining factors that place elementary students at risk.

Journal of Educational Research, 87, 325-333.

Schumaker, J. B., Alley, G. R., Warner, M. M., & Deshler, D. D. (1980). *A research strategy for*

studying learning disabled adolescents and young adults: Monograph #6. Lawrence, KS: The

University of Kansas Institute for Research in Learning Disabilities.

Schumaker, J. B., Denton, P. H., & Deshler, D. D. (1984). *The learning strategies curriculum: The*

paraphrasing strategy. Lawrence: The University of Kansas Institute for Research in Learning

Disabilities.

Schumaker, J. B., Deshler, D. D., Alley, G. R., & Warner, M. M. (1983). Toward the development of an

intervention model for learning disabled adolescents. *Exceptional Education Quarterly, 4*(1), 45-

74.

Scott, C. M. (1994). A discourse continuum for school-age students: Impact of modality and genre. In

G. P. Wallach & K. G. Butler (Eds.), *Language learning disabilities in school-age children and*

adolescents: Some principles and applications (pp. 219-252). New York: Macmillan.

Shaw, S. F., Cullen, J. P., McGuire, J. M., & Brinckerhoff, L. C. (1995). Operationalizing a definition

of learning disabilities. *Journal of Learning Disabilities, 28*, 586-597.

Sjostrom, C. L., & Hare, V. C. (1984). Teaching high school students to identify main ideas in
expository text. *Journal of Educational Research, 78*, 114-118.

Snow, C. E., Barnes, W. S., Chandler, J., Goodman, I. F., & Hemphill, L. (1991). *Unfulfilled
expectations: Home and school influences on literacy*. Cambridge, MA: Harvard University
Press.

Soodak, L. C., & Podell, D. M. (1994). Teacher's thinking about difficult-to-teach students. *Journal of
Educational Research, 88*, 44-51.

Stanovich, K. E. (1988). Explaining the differences between the dyslexic and the garden-variety poor
reader: The phonological-core variable-difference model. *Journal of Learning Disabilities, 21*,
590-604.

Tabachnick, B. G., & Fidell, L. S. (1996). *Using multivariate statistics* (3rd ed.). Boston: Allyn &
Bacon.

Tanner, J., Krahn, H., & Hartnagel, T. F. (1995). *Fractured transitions from school to work: Revisiting
the dropout problem.* Toronto: Oxford University Press.

Torgesen, J. K. (1988a). Applied research and metatheory in the context of contemporary cognitive
theory. *Journal of Learning Disabilities, 21*, 271-274.

Torgesen, J. K. (1988b). The cognitive and behavioural characteristics of children with learning
disabilities: An overview. *Journal of Learning Disabilities, 21*, 587-589.

Torgesen, J. K. (1989). Cognitive and behavioral characteristics of children with learning disabilities:
Concluding comments. *Journal of Learning Disabilities, 22*, 166-175.

Torgesen, J. K., Alexander, A. W., Wagner, R. K., Rashotte, C. A., Voeller, K. K. S., & Conway, T.
(2001). Intensive remedial instruction for children with severe reading disabilities: Immediate
and long-term outcomes from two instructional approaches. *Journal of Learning Disabilities, 34*,
33-58, 78.

Trusty, J., & Dooley-Dickey, K. (1993). Alienation from school: An exploratory analysis of elementary and middle school students' perceptions. *Journal of Research and Development in Education, 26*(4), 232-242.

Vauras, M., Lehtinen, E., Olkinuora, E., & Salonen, P. (1993). Devices and desires: Integrative strategy instruction from a motivational perspective. *Journal of Learning Disabilities, 26*, 384-391.

Wallach, G. P. & Butler, K. G. (Eds.) (1994). *Language learning disabilities in school-age children and adolescents: Some principles and applications*. New York: Macmillan.

Weber, K .J. (1994). *Special education in Canadian schools*. Concord, ON: Irwin.

White, W. J. (1992). The postschool adjustment of persons with learning disabilities: Current status and future projections. *Journal of Learning Disabilities, 25*, 448-456.

Williams, J. P. (1988). Identifying main ideas: A basic aspect of reading comprehension. *Topics in Language Disorders, 8* (3), 1-13.

Wong, B.Y.L. (1993). Pursuing an elusive goal: Molding strategic teachers and learners. *Journal of Learning Disabilities, 26*, 354-357.

Wong, B. Y. L. (1996). *The ABCs of learning disabilities*. San Diego: Academic Press.

Zigmond, N., Vallecorsa, A., & Leinhardt, G. (1990). Reading instruction for students with learning disabilities. *TLD/Language Disorders and Learning Disabilities*, 89-98.

Zumbo, B. D. (1997). Reality or mythology? The simple difference score as an inherently poor measure. *Edgeworth Series in Quantitative Behavioral Science, # 97-4*, University of Northern British Columbia: Canada.

Footnotes

[1] Changes included moving from a year-long system to a semester system at the school, use of a single teacher for the SIM class rather than the team teaching model, and additions to the content of the SIM curriculum.

[2] Appendix A includes an example drawn from field notes of a class during which the students learned to apply the RAP strategy (previously practiced on short essays) to a documentary video on beavers. Appendix B includes a sample of the first page of one student's notes from the beaver RAP. Appendix C displays the first page of this student's essay, written using the notes taken using RAP. These examples come from a SIM class offered in a subsequent year, as student samples from the first few years of the intervention were not retained. They are reflective of consistent elements of instruction in the SIM class.

[3] We followed Zumbo (1997), who supports the use of gain scores. He has argued that the F statistic of gain score analysis is close to equivalent to that of split plot ANOVAs, and that gain scores are reliable as long as the following conditions are met: accurate measurement, no floor or ceiling effect, true change occurs rather than regression towards the mean, there is variability in the range of scores rather than homogeneity, and change is heterogeneous.

Table 1

Mean Raw Scores, Standard Deviation Scores, and Grade Equivalent (GE) Scores on the SDRT of Total Grade 8 Populations in School 1 and School 2

Group	Pretest				Posttest				GE difference
	N	Raw	*SD*	*GE*	*N*	Raw	*SD*	*GE*	
During the study									
1993-94 School 1	(160)	50.4	9.3	7.8	(115)	53.0	8.1	8.6	0.8
1994-95 School 1	(187)	50.0	10.4	7.8	(130)	53.5	7.6	8.9	1.1
1995-96 School 1	(199)	47.2	11.7	7.3	(144)	51.1	9.4	8.0	0.7
1995-96 School 2	(163)	47.7	11.0	7.5	(103)	52.4	9.9	8.3	0.8
Years Subsequent to the Study									
1996-97 School 1	(171)	46.3	12.9	7.1	(127)	49.5	10.9	7.8	0.7
1997-98 School 1	(153)	49.6	10.1	7.8	(148)	52.3	9.0	8.3	0.5
1998-99 School 1	(141)	50.0	9.6	7.8	no data available				
1999-00 School 1	(144)	47.5	10.3	7.5	(116)	51.3	7.7	8.0	0.5

Note. The maximum raw score on the *SDRT* is 60.

Table 2

Pretest and Posttest Scores on the SDRT for the SIM and LA Intervention Groups and the No-LA Control Group.

Experimental Groups	n	Pretest					Posttest			
		Raw	*SD*	*GE*	range		Raw	*SD*	*GE*	range
During the Study										
1993-95 SIM	33	36.0	8.2	5.6	17-55		44.8	8.7	6.9	23-59
1995-96 LA	34	36.3	9.5	5.6	16-56		40.4	12.3	6.1	16-59
1995-96 No-LA	31	35.9	7.2	5.6	21-47		42.2	7.8	6.5	14-54
Years Subsequent to the Study										
1996-97 SIM	22	29.4	9.5	4.7	16-49		38.0	10.1	5.9	15-52
1997-98 SIM	26	33.3	8.7	5.2	16-47		46.0	11.0	7.1	17-59
1998-99 LA	20	33.5	10.7	5.2	10-52		no data available			
1999-00 SIM	15	27.0	10.4	4.5	10-45		38.5	12.3	6.0	21-55

Note. During the study years, the Strategy Intervention Model (SIM) groups were in School 1, and the Learning Assistance (LA) groups and No-LA control group were in Schools 1 and 2. Subsequent data are from School 1.

Table 3

Mean SDRT Gain Scores, Range Scores, and Grade Equivalent Difference Scores

Group	*n*	Mean gain	Range of gain	*GE* difference
1993-95 SIM	33	8.8*	-7 - +21	1.3
1995-96 LA	34	4.1	-13 - +15	0.5
1995-96 No-LA	31	6.3	-9 - +15	0.9

Note. *In a pairwise comparison of SIM and LA, $t = 2.63$, $p \leq .01$. SIM = Strategy Intervention

Model; LA = Learning Assistance; No-LA = No-intervention control group.

Table 4

Mean Rate of Absenteeism, Teacher-Assigned Behavior Scores, and Number of Subjects Failed by SIM, LA, and No-LA Students

		Days Absent			Behavior			Subjects Failed		
Group	*n*	Mean	*SD*	Range	Mean	*SD*	Range	Mean	*SD*	Range
SIM	33	9.7	8.8	0 – 31.5	14.0	6.9	3 – 30	2.0	2.0	0 –7
LA	34	14.0	9.9	0 – 40.5	12.9	7.7	1 – 28	2.4	2.2	0 – 7
No-LA	31	8.4	7.0	0.5 - 26.5	16.1	7.0	4 – 31	1.3	1.8	0 – 6

Note. SIM = Strategy Intervention Model; LA = Learning Assistance; No-LA = Control group of students in regular inclusive program receiving no additional learning assistance or strategy instruction. Possible range of behavior scores was from 0 (extremely poor) to 32 (excellent).

Table 5

Number and Percentages of Students in the School with Low, Low Average, and Average to Above Average Reading Comprehension Scores Who Failed One or More Subjects

Reading Comprehension Level	*n*	Number that Failed	Percent that Failed
low	43	38	88%
low average	18	7	39%
average to above average	109	13	12%

Note. Low: below 25th percentile; low average: between 26th and 39th percentile; average to above average: above 40th percentile on *SDRT*.

Table 6

Summary of Regression Analysis for Variables Predicting Students' Subject Failure

Variable	*B*	*SE B*	CI	β
Behavior Score	-0.146*	0.022	-0.189 to -0.103	-.528
Absenteeism	0.065*	0.018	0.030 to 0.099	.290
Reading Pretest	-0.042*	0.015	-0.072 to -0.012	-.192
Reading Gain	.009	0.019	-0.029 to 0.047	.033

Note. $R^2 = .58$; $p \leq .05$. *$p \leq .01$

Appendix A
RAP of the Beaver Video (From Field Notes)

Introduction
Teacher: Explains that the class will do a RAP on a video.
              Describes how to use key words for note-taking.
              Asks the students to predict the topic from her introduction.
Students: Correctly identify the topic of the video as "beavers."

Brainstorming
Teacher: Calls for the students to brainstorm on the topic of the life of the beaver.
Students: Put hands up and also call out ideas. [During this brainstorm, the students are
              mostly very engaged.]
Teacher: Writes the students' contributions on an overhead as the brainstorm proceeds
              (Shown below).

ARCHITECTURE OF THE BEAVER

how it lives-habitat
eats
dams and homes
family life-social life
intelligence
abilities
population statistics
enemies and friends: cohabitants, predators
economic value
trapped-pest

Teacher: As she writes the students' contributions, she provides terminology such as
              "architecture" and "habitat." [She labels these terms as "scientific terms,"
              thereby accepting the student's contributions and providing additional vocabulary
              without implying that their words are "wrong"].
              Rephrases and elaborates students' remarks. [For example, talks about beavers
              being "pests" when a student remarks that we trap beavers.]
Students: As the brainstorming proceeds, and the teacher writes on the overhead, the
              students copy the notes into their notebooks
Teacher: "If you don't have this all written, you can get it at lunch time."
              Remarks that they have been very good predictors about what the video is about.
              "After the video, the class will brainstorm the video together, and organize it into
              main ideas."

Instructions for RAPping the video
Teacher: Tells students that what she wants them to do while watching the video is to write
              down keywords about the main ideas.
              Tells the students about how the video is structured so they know what to expect.

When she turns the video on, she prompts the students to "pay attention or you'll miss it."

Viewing First Segment of Video
Teacher: During the video, she draws their attention to the topic sentence.
Students: Most appear to be watching the video.

Pause During First Segment of Video
Teacher: Stops the video and asks them to restate the topic sentence.
Students: Put hands up. Those nominated to respond state possible topics.
Teacher: Summarizes and restates their responses.
                Restarts video.

[During this viewing activity, there is frequent interspersing of behavioral controls -- for example: the teacher tells the students to "let her (a student) deal with her own business," and she re-locates Kieran to a desk apart from the rest.]

Continuation of First Segment of Video
Teacher: During the video she prompts the students twice to write down keywords.
Students: Some students jot notes into their notebooks.

Guided Note-taking Following the First Segment
Teacher: Stops the video and asks the students for the main idea of this part of the video.
Students: Several put hands up to answer.
                There are many guesses.
                The students start shouting out.
Teacher: Acknowledges students' contributions by repeating and elaborating
                Finally summarizes orally, and writes main idea #1 and details on the overhead:

MI 1 DESCRIPTION OF THE BEAVER

A. A beaver can weigh from 60-100 pounds.
B. They live up to 12 years old
C. Beavers are the second largest rodent in the world
D. Their flat tails are used for rudders & warning (signals)
E. They spend most of their time in the water

Teacher: As she writes about the beavers' flat tails: "Kieran be quiet!"
                As she writes the word "signals": "I'll stick that word in brackets because I'm not sure if I like it yet."
                Instructs the students to copy down the notes from the overhead.
                Encourages them to add their own information to the list.
                Comments to the class at large: "I'm glad to see you're looking at your keywords."

[At this point, when they are supposed to be completing the notes from the video, many of the students are calling out rude and disruptive remarks -- for example: "I didn't know they used a rubber."]

Preparation to View the Second Segment
Teacher: Prompts them to use keywords, "as the information is flowing by fast."
Prompts them that the video is about to begin….

….The RAP continues on in this manner for the rest of the class (70 minutes). Some students fall behind in note-taking, or become inattentive or disruptive by the end. Altogether, the students view, brainstorm about, and take notes on eight main ideas from the video, as well as copying down a concluding sentence.

Appendix B

First Page of Bashir's Notes from the Beaver RAP

Keywords   Oct 30, 01 Architure of the Beaver

~~■~~ how it lives - habitat
eats - food supplies
dams and homes
family life - social life
intelligence
abilities
population statistics   predator
enemies and friends ~~co-habits~~ habitants ^
~~en same~~ economic value & trapped post

M II   Description of the Beaver
A. A beaver can weigh from 60 - 100 pounds

60 pound | B. They live up to 12 years old.
12 years | C. Beavers are the second largest rodent
100 pounds | in the world.
scales | d. Their flat tails are used for
water | rudders and warning (signals)
swimms | E. They spend most of their time in
surface | water.
danger |
Fake | M I2 Food of the beaver
fare | A. Beavers haus flexible toes to grasp
meal | its food.
leaves | B. They have strong teth to gnaw through
branches trees |
fell | c) Most of their food is on land.
◯ flexage | d. They eat leaves, lilies, branches bark
strong teeth — haw bivore -

Appendix C

First Page of Bashir's Essay from the Beaver RAP

Oct.31.01 Archtrive

Beavers are the second largest roddent in the world. A beaver can weigh from 60-100 pound. They spend most of their time in water. Their flat tails are used for rudders and warning (siagnals.)

Most of thier food is on land. They eat leaves, lilies, branches, bait. Beavers have 5 flexible toes to grasp its food. They have strong teth. to gnaw through trees. Beavers are called herbivores.

Beavers use mud and branches to build thier dam. They pile up more branches when