

Report on the Arrowsmith Program in the Toronto Catholic District School Board

January 25, 2007

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ARROWSMITH PROGRAM

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A report on the effectiveness of the Arrowsmith Program in the Toronto Catholic District School Board (TCDSB) was completed on January 25, 2007 and presented to the Superintendent of Special Services, Dr. Jim Saraco.

The Arrowsmith Program was first implemented in the TCDSB in 1997 at St. Patrick Catholic Secondary School and currently is implemented in seven elementary schools in the TCDSB. This report tracks the progress of students in the Arrowsmith Program in the TCDSB on standardized achievement measures, on the amount of resource support needed pre Arrowsmith Program and post Arrowsmith Program, on reports from parents, teachers and students of specific observable cognitive and academic gains, and on reports from teachers, students and parents of the success these students have attained in high school and post secondary programs.

This report concludes:

The goal of the Arrowsmith Program, as we have stated, is to identify, intervene, and strengthen several of the cognitive capacities underlying learning disabilities that affect learning and the acquisition of academic skills and curriculum and to help students capitalize on their increased learning capacities and eventually reintegrate them into the full curriculum, enabling them to function with a minimum of special education assistance, program accommodations or modifications and, in most cases, without the need for any further special education intervention or program modification.

In this report on the effectiveness of the Arrowsmith Program in achieving the above goals with learning disabled students in the TCDSB the following was found:

- an increase in the rate of acquisition of specific academic skills (Word Recognition, Arithmetic, Reading Comprehension, Reading Speed) of between 1.5 to 3 times;
- parents, students and teachers observed and rated noticeable changes in cognitive abilities necessary for learning such as the ability to focus, understanding instructions, listening skills, organizational skills, remembering factual information, understanding ideas, and in skill acquisition such as reading comprehension, legibility of written work, telling time and in areas of confidence, self-esteem and frustration level;
- students observed and noted specific changes in auditory memory, visual memory, comprehension, reading, spelling, mathematics, mental math, reasoning, writing, grammar, understanding concepts, improved grades in academic classes, doing work independently, and self-organization;
- teachers observed and noted specific changes in reading, writing, logical reasoning, understanding concepts, concentration and focus, visual memory, non-verbal problem solving, mental arithmetic, number sense, thinking and problem solving;
- a reduction in the amount of resource support required after the student left the Arrowsmith Program;
- a reduction in the amount of resource support required while the student was in the Arrowsmith Program;
- success in high school and post secondary programs with no or minimal resource support.

The above findings, combined with previous research of the program, strongly support the effectiveness of the Arrowsmith Program for a wide range of learning disabilities.

We are very pleased with the results of this report which confirm the results of previous research and the feedback we have had from parents, teachers, and students over the past nine years of delivery of the Arrowsmith Program in the TCDSB.

Sincerely
Barbara Arrowsmith Young
Director Arrowsmith School

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THE TORONTO CATHOLIC DISTRICT SCHOOL BOARD**

Unless otherwise noted, all reports and observations referred to below relate to students in the Arrowsmith Program in the Toronto Catholic District School Board

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OVERVIEW OF THE ARROWSMITH PROGRAM

The Arrowsmith Program, a cognitive program for the remediation of learning disabilities, was first implemented in the Toronto Catholic District School Board (TCDSB) in September 1997 in St. Patrick Catholic Secondary School. In January 1999, the Arrowsmith Program was implemented in St. Theresa Shrine Catholic Elementary School. The Arrowsmith Program is currently in the following elementary schools in the TCDSB: St. Theresa Shrine; Transfiguration; Our Lady of Guadalupe; Holy Spirit; St. Alphonsus; St. Francis Xavier; and St. Malachy. There are currently 70 elementary school students enrolled in the Arrowsmith Program in the TCDSB.

Learning Disabilities (LD) seriously affect academic and emotional development and are unlikely to remit without specialized intervention. Students with learning disabilities tend to fall further and further behind their peers in academic performance and consequently tend to have a low sense of self-worth. Klein and Mannuza (2000)¹ followed 104 children with LD who initially did not have emotional difficulties. Sixteen years later, these children, when compared to 124 controls, had a much lower status occupational level and continued to struggle with a high prevalence of psychiatric and addiction disorders.

Various special education programs have been developed to address learning disabilities. The goal of the Arrowsmith Program is to identify, intervene, and strengthen several of the cognitive capacities underlying learning disabilities that affect learning and the acquisition of academic skills and curriculum and to help students capitalize on their increased learning capacities and eventually reintegrate them into the full curriculum, enabling them to function with a minimum of special education assistance, program accommodations or modifications and, in most cases, without the need for any further special education intervention or program modification. A more detailed description of the Arrowsmith Program may be found at Tab11.

Several research studies have been carried out on the Arrowsmith Program and a summary of these studies can be found at Tab13. All of these studies point to the benefit of this program in addressing specific cognitive and academic needs of students with learning disabilities.

The purpose of this report is to document the effectiveness of the Arrowsmith Program in the TCDSB by looking at the following: test-retest scores on standardized test measures administered annually to students in the Arrowsmith Program; questionnaires completed by parents, students and teachers rating improvements in a number of specific areas; parent, student and teacher comments describing student improvements academically and cognitively; the amount of resource support students required pre and post the Arrowsmith Program; and follow-up data of student success in high school and post-secondary programs.

¹Klein, R.G. and Mannuza, S. (2000). Children with complicated reading disorders grown up. In L.L. Greenhill (Ed.), *Learning disabilities: Implications for psychiatric treatment*. Washington: American Psychiatric Press.

TCDSB SAMPLE CHARACTERISTICS

All students admitted into the Arrowsmith Program in the TCDSB have been identified as Learning Disabled by the TCDSB. There have been 235 students enrolled in the Arrowsmith Program in the TCDSB since September 1997.

Test-Retest Measure Sample

Data on standardized achievement measures was available for the following 120 students.

Grade and Gender at entry to the Arrowsmith Program in the TCDSB in the sample for which test-retest data was available

Year One Data

Grade 1		Grade 2		Grade 3		Grade 4		Grade 5		Grade 6		Grade 7		Grade 8		Grade 9	
M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
1				1	2	4	7	9	5	8	2	6	4	3	1	13	4

Total Males: 45

Total Females: 25

Total: 70

Year Two Data

Grade 1		Grade 2		Grade 3		Grade 4		Grade 5		Grade 6		Grade 7		Grade 8		Grade 9	
M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
1		2		1	1	5	1	10	2	7	1	3				12	4

Total Males: 40

Total Females: 10

Total: 50

Test Measures

As part of the entry process into the Arrowsmith Program in the TCDSB students are tested by their special education teacher on a number of achievement tests. For the purposes of this report, test – retest data for a total of 120 learning disabled students in the Arrowsmith Program in the Toronto Catholic District School Board was compared on the following standardized achievement tests:

- (1) Wide Range Achievement Test – Word Recognition
- (2) Wide Range Achievement Test – Arithmetic
- (3) Monroe-Sherman Achievement Test – Passage Comprehension
- (4) Monroe-Sherman Achievement Test – Reading Speed

AVERAGE GRADE GAIN PRIOR TO AND DURING PARTICIPATION IN THE ARROWSMITH PROGRAM

The following charts show that students in the Arrowsmith Program increase in their rate of acquisition of basic academic skills as compared to their rate of learning prior to entry in the Arrowsmith Program (AP). This increase is consistent for students one and two years in the program.

Average Grade Gain after <u>one</u> year in the Arrowsmith Program								
	Word Recognition		Arithmetic		Passage Comprehension		Reading Speed	
	Prior AP	AP	Prior AP	AP	Prior AP	AP	Prior AP	AP
Mean	.6	1.9	.6	1.5	.6	1.8	.6	2.0
Std Dv	.3	.9	.2	.7	.2	.7	.2	.9
Range	.2 to 1.6	.3 to 4.1	.02 to 1.1	.1 to 3.0	.1 to 1.1	.6 to 3.5	0 to .9	.4 to 5.3
N	64		60		68		65	

Gains prior to AP were calculated by dividing the student’s initial score on each test measure by the student’s grade level at the time the test was administered. For example, if a student was in grade 4 and their Word Recognition score was grade 2.5, their average gain per year prior to AP would be 2.5 divided by 4 or .63 of a grade. Gains during AP were calculated by subtracting the pre-test score from the post-test score.

Average Grade Gain after <u>two</u> years in the Arrowsmith Program (gain measured over 2 year span)								
	Word Recognition		Arithmetic		Passage Comprehension		Reading Speed	
	Prior AP	AP	Prior AP	AP	Prior AP	AP	Prior AP	AP
Mean	1.1	3.0	1.3	2.0	1.2	2.7	1.2	2.7
Std Dv	.43	1.5	.4	.9	.4	.8	.5	1.5
Range	.1 to 1.8	.6 to 7.5	.4 to 2.0	0 to 4.7	0 to 2.0	1.3 to 5.0	0 to 2.0	.4 to 6.6
N	48		48		50		50	

The average increase in the rate of acquisition of specific academic skills for students from prior to participation in the Arrowsmith Program to one to two years into the program is as follows: Word Recognition is approximately 3 times faster; Arithmetic is 1.5 to 2 times faster; Reading Comprehension is 2 to 3 times faster; and Reading Speed is approximately 2 to 3 times faster. These gains are supported by student, teacher and parent comments which appear at Tabs 2 to 10 stating improvements in these areas for the majority of the students in the program.

QUESTIONNAIRE RESULTS

Parents, students and teachers were asked to complete a questionnaire for students currently in the Arrowsmith Program in the TCDSB and rate for a number of behaviors as to whether this behavior was never a concern for the student, was a concern and had shown no change, was a concern and had shown noticeable change or was a concern and had shown extremely noticeable change over the course of the student's participation in the Arrowsmith Program in the TCDSB. The number of individuals rating each item appear beside each rater for that item.

IMPROVEMENT RATING

	Never A Concern	% No Change	% Noticeable Change	% Extremely Noticeable Change
<u>Ability to Focus</u>				
Student Rating n=42	12%	7%	65%	16%
Parent Rating n=62	5%	11%	60%	24%
Teacher Rating n=55	13%	7%	53%	27%
<u>Understanding/ Following Instructions</u>				
Student Rating n=41	5%	10%	53%	32%
Parent Rating n=54	4%	9%	67%	20%
Teacher Rating n=55	7%	0%	62%	31%
<u>Listening Skills</u>				
Student Rating n=42	14%	10%	55%	21%
Parent Rating n=47	4%	17%	60%	19%
Teacher Rating n=54	18%	2%	54%	26%
<u>Organizational Skills</u>				
Student Rating n=42	14%	14%	51%	21%
Parent Rating n=45	2%	22%	56%	20%
Teacher Rating n=55	11%	4%	56%	29%
<u>Willingness to Attempt/ Complete Homework</u>				
Student Rating n=42	10%	7%	50%	33%
Parent Rating n=58	1%	9%	43%	47%
Teacher Rating n=55	13%	7%	42%	38%
<u>Remembering Factual Information</u>				
Student Rating n=42	10%	10%	47%	33%
Parent Rating n=55	4%	12%	57%	27%
Teacher Rating n=55	4%	5%	60%	31%

Understanding Ideas

Student Rating	n=42	12%	7%	60%	21%
Parent Rating	n=58	5%	10%	57%	28%
Teacher Rating	n=55	7%	2%	56%	35%

Legibility of Written Work

Student Rating	n=42	5%	12%	50%	33%
Parent Rating	n=53	2%	15%	49%	34%
Teacher Rating	n=54	13%	4%	55%	28%

Reading Comprehension

Student Rating	n=42	12%	7%	44%	37%
Parent Rating	n=57	14%	7%	58%	21%
Teacher Rating	n=54	2%	7%	41%	50%

Reads for Pleasure

Student Rating	n=39	13%	28%	41%	18%
Parent Rating	n=54	7%	39%	34%	20%
Teacher Rating	n=54	7%	20%	43%	30%

Telling Time

Student Rating	n=41	17%	7%	17%	59%
Parent Rating	n=51	14%	18%	31%	37%
Teacher Rating	n=54	4%	7%	37%	52%

Growth of Self Esteem

Student Rating	n=40	17%	10%	33%	40%
Parent Rating	n=55	4%	9%	45%	42%
Teacher Rating	n=54	4%	2%	33%	61%

Growth of Confidence (trying new things)

Student Rating	n=42	14%	7%	36%	43%
Parent Rating	n=55	2%	13%	45%	40%
Teacher Rating	n=55	5%	2%	35%	58%

Attitude toward School

Student Rating	n=42	24%	21%	31%	24%
Parent Rating	n=53	17%	11%	38%	34%
Teacher Rating	n=55	36%	5%	26%	33%

School Attendance

Student Rating	n=42	60%	16%	14%	10%
Parent Rating	n=54	50%	9%	29%	12%
Teacher Rating	n=55	67%	2%	15%	16%

Frustration Level

Student Rating	n=42	20%	7%	41%	32%
Parent Rating	n=54	7%	13%	65%	15%
Teacher Rating	n=54	15%	0%	48%	37%

Anxiety Level

Student Rating	n=42	14%	19%	38%	29%
Parent Rating	n=54	7%	13%	65%	15%
Teacher Rating	n=54	17%	4%	46%	33%

Ability to Self Advocate

Student Rating	n=42	16%	14%	39%	31%
Parent Rating	n=54	6%	26%	52%	16%
Teacher Rating	n=44	6%	17%	46%	31%

PREVIOUS RESEARCH INDICATING SIMILAR IMPROVEMENTS

In a previous study done in 2003, “Report on a Study of the Arrowsmith Program in the TCDSB” by Dr. Lancee, the following improvements were found that are consistent with those above:

The 30 AP students, their parents and teachers completed a 24 item satisfaction questionnaire. Improvements were seen by at least 2 raters (teacher and student; student and parent; or teacher and parent) in more than 80% of students in the following areas: reading comprehension; ability to focus on task; understanding ideas; legibility of written work; confidence; self-esteem; and ability to self-advocate. Between 70% and 80% of students were seen as having improved in: telling time; remembering factual information; listening skills; organizational skills; and understanding and following instructions.

The correlation between improved comprehension as seen by teachers correlated highly with the Relative Progress GE scores (Pearson $r = 0.49$; $p < 0.01$).

JUNE 2000 REPORT OF STUDENTS ONE YEAR AFTER COMPLETING THE ARROWSMITH PROGRAM IN THE TCDSB

In a report completed in June 2000 of both high school and elementary age students one year after completing their participation in the Arrowsmith Program in the TCDSB the following improvements were noted independently by three raters (parent, teacher, student):

- Ability to focus and concentrate
- Understanding /clarity of thinking
- Reading skills and comprehension
- Understanding math
- Penmanship
- Writing makes more sense
- Speaks more clearly
- Memory
- Organizing activities
- Better use of time and time management
- Homework completion / work habits
- Task completion
- Doing better academically
- Growth of self-esteem, patience, maturity, confidence, independence, positive attitude
- Taking responsibility
- Takes risks and deals with frustration better
- Lower anxiety

ACADEMIC ACQUISITION

The improvement in the rate of acquiring academic skills and knowledge in reading, reading comprehension and arithmetic were demonstrated on achievement tests and these improvements were also noted on ratings from parents, teachers and students. The student observations at Tab 4 also note improvements in these specific academic areas.

RESOURCE SUPPORT PROVIDED TO STUDENTS PRIOR TO ENTERING THE ARROWSMITH PROGRAM

We were able to gather the following information for 64 students on the amount of resource support they were receiving in elementary school prior to entering the Arrowsmith Program in the TCDSB:

Students with 0% resource/E.A.support prior to AP (either waiting for support or had not been identified as yet)	5
Students with 1 to 2 periods of resource/E.A. support prior to AP	23
Students with 4 to 8 periods (50% -100%) of resource/E.A. support prior to AP	36

56% of the above students received 50-100% of resource support prior to entry into the Arrowsmith Program which underlines the fact that the students selected for participation in the Arrowsmith Program in the TCDSB tend to be severely learning disabled.

36% of the above students received 1 to 2 periods of resource support prior to entry in the Arrowsmith Program.

Of the 8% of students who did not receive resource support prior to entry in the Arrowsmith Program, all were either waiting for identification or for resource support.

We can presume that all students identified as Learning Disabled who were admitted to the Arrowsmith Program had at a minimum accommodations, modifications and/or 1 to 2 periods of resource assistance prior to entering AP.

Amount of Resource Support Pre and Post Arrowsmith Program In the TCDSB
(42 Students)

Resource Support Prior to Arrowsmith Program		Resource Support After Arrowsmith Program	
% of Students	Amount of Resource Support	% of Students	Amount of Resource Support
0%	No Resource Support	69%	No Resource Support
55%	1 to 2 Periods Resource Support	26%	1 Period* of Resource Support
45%	4 to 8 Periods of Resource Support	5%	4 to 8 Periods of Resource Support

* This includes occasional use of a resource classroom for completing homework and writing exams

SECONDARY AND POST-SECONDARY OUTCOME OF ARROWSMITH PROGRAM STUDENTS

The TCDSB teachers implementing the Arrowsmith Program were able to provide follow up information on 42 students who are now in high school or post-secondary programs (college or university).

High School Results

Average Overall % on current report card in High School: 79%

Resource Assistance in High School:

- 69% (29) of students have/had 0 periods of resource assistance
- 26% (11) of students have/had 1 period of resource assistance per day or less*
- 5% (2) of students have 50% to 100% resource assistance (or closed class, e.g., BOLD program)

Therefore, 95% of students have/had 0% to 12% (1 period per day maximum) of resource assistance per day.

Resource Assistance Prior to Arrowsmith Program

Prior to entry into the Arrowsmith Program for the above 42 students, teachers reported the following periods of resource assistance in elementary school:

- 55% (23) of students had 1 to 2 periods of resource assistance
- 45% (19) of students had 50% to 100% resource assistance

Post Secondary (College/University) Results

The TCDSB teachers currently implementing the Arrowsmith Program were able to provide follow up information on 6 students who are now in post-secondary programs (college or university).

Average % on current transcript in Post-Secondary Program: 80 to 90%

Current Resource Assistance in Post-Secondary Program: 0%

* this includes the occasional use of a resource classroom for completing homework and writing exams which is considered less than 1 period of support

ELEMENTARY SCHOOL OUTCOME OF ARROWSMITH PROGRAM STUDENTS

All students admitted into the Arrowsmith Program in the TCDSB have been identified as Learning Disabled by the TCDSB. There have been 235 students enrolled in the Arrowsmith Program in the TCDSB since September 1997. Students are in the Arrowsmith Program in the TCDSB from 1 to 4 years on average for a minimum of 4 periods per day at the beginning of the program tapering off to 1 to 2 periods as they approach the end of the program with full integration into the age appropriate class at the end of the program.

Years Students in Arrowsmith Program in TCDSB

		1 Year	2 Years	3 Years	4 Years
Number of Students		56	59	36	14
%		34%	36%	22%	8%

Total = 165 (plus current 70 students = 235)

The TCDSB teachers implementing the Arrowsmith Program were able to provide information in terms of integration into regular academic classes as a result of improvements in the student's ability to handle the regular curriculum for 49 of the 70 students who are currently in the Arrowsmith Program in the TCDSB. The remaining students in the Arrowsmith Program in the TCDSB began the program in September 2006 so it is premature to be able to gather this data for these students.

The goal of the Arrowsmith Program is for the students to be able to fully integrate into the regular curriculum at grade level with no or minimal support required. All of the students below, except for the 8 who are fully integrated, continue to work on specific components of the Arrowsmith Program and as such have not completed the program so are not yet ready for full integration into the regular curriculum.

In the TCDSB, as the student demonstrates competence in specific areas as a result of the Arrowsmith Program, the student is integrated into the regular academic curriculum and this happens progressively over the course of the program as the following data indicates. The student at the outset of the program may spend 4 periods in the Arrowsmith classroom and by the end of the program they may be spending 1 period in the Arrowsmith classroom prior to re-integration into the age appropriate academic classroom.

Number of Arrowsmith Students currently in the Arrowsmith Program who are re-integrated into the Regular Program with no support or modifications:

Fully Integrated into the Regular Program (all subjects):	8
Integrated into Regular Program Math and Language:	11
Integrated into Regular Program Math:	12
Integrated into Regular Program Language:	3
Integrated into Regular Program non-core subjects:	15

CONCLUSION

The goal of the Arrowsmith Program, as we have stated, is to identify, intervene, and strengthen several of the cognitive capacities underlying learning disabilities that affect learning and the acquisition of academic skills and curriculum and to help students capitalize on their increased learning capacities and eventually reintegrate them into the full curriculum, enabling them to function with a minimum of special education assistance, program accommodations or modifications and, in most cases, without the need for any further special education intervention or program modification.

In this report on the effectiveness of the Arrowsmith Program in achieving the above goals with learning disabled students in the TCDSB the following was found:

- an increase in the rate of acquisition of specific academic skills (Word Recognition, Arithmetic, Reading Comprehension, Reading Speed) of between 1.5 to 3 times;
- parents, students and teachers observed and rated noticeable changes in cognitive abilities necessary for learning such as the ability to focus, understanding instructions, listening skills, organizational skills, remembering factual information, understanding ideas, and in skill acquisition such as reading comprehension, legibility of written work, telling time and in areas of confidence, self-esteem and frustration level;
- students observed and noted specific changes in auditory memory, visual memory, comprehension, reading, spelling, mathematics, mental math, reasoning, writing, grammar, understanding concepts, improved grades in academic classes, doing work independently, and self-organization;
- teachers observed and noted specific changes in reading, writing, logical reasoning, understanding concepts, concentration and focus, visual memory, non-verbal problem solving, mental arithmetic, number sense, thinking and problem solving;
- a reduction in the amount of resource support required after the student left the Arrowsmith Program;
- a reduction in the amount of resource support required while the student was in the Arrowsmith Program;
- success in high school and post secondary programs with no or minimal resource support.

The above findings, combined with previous research of the program, strongly support the effectiveness of the Arrowsmith Program for a wide range of learning disabilities.

**OBSERVATIONS OF IMPROVEMENTS BY THE ARROWSMITH CLASSROOM
TEACHER AT ST. THERESA SHRINE CATHOLIC SCHOOL May 2004**

Student Follow Up

Prior to Arrowsmith Program in elementary school very frustrated, anxious and academically low, non reader

Currently in Grade 9, got all credits - is coping well, only seeks assistance for completing assignments

Prior to Arrowsmith Program in elementary school very frustrated, anxious and academically low, difficulty reading, writing, reasoning and auditory memory

Currently in Grade 11 - 79% average, doing very well in high school, more confident, self-motivated; no support; came in to talk to Arrowsmith students

Prior to Arrowsmith Program in elementary school very frustrated, non reader, academically very weak

Currently in Grade 10 - passed Grade 10 Literacy Test, independent and highly motivated and very happy, no resource support, 70-75% average

Prior to Arrowsmith Program in elementary school very poor reader and difficulty writing

Currently in Grade 8 - very successful in grade 8, handling very full program with lots of extra curricular sports, getting 80s in grade 8, confident and not spending hours writing and re-writing; ready for high school

Prior to Arrowsmith Program in elementary school very reluctant to read or write

Currently in Grade 8 - now almost fully integrated in grade 8 and getting 70s, confident for high school

PARENT COMMENTS FOR SOME STUDENTS WHO HAVE COMPLETED THE ARROWSMITH PROGRAM AND ARE NOW IN HIGH SCHOOL

The following comments were written by 8 parents of students who had completed the Arrowsmith Program in the TCDSB and are now enrolled in high school. For confidentiality, all names have been deleted.

Our child's overall percentage stands at 78%. In grade 9 our child used a bit of the resources that were offered, but now in grade 11 he only uses it when he needs to get extended time for tests and his resource teacher says that doesn't happen often. Our child only goes there for minimal use and would much rather stay in his regular class. This year it was recommended that our child take a GLE course which basically deals with making sure the student is prepared especially with the organizational skills for grade 12 and basically our child used it to complete homework. Apparently it was noted that due to our child's Arrowsmith skills, our child shined in this area. It was clear that he did not need it. During his years in Arrowsmith you could see progress but you really saw how he benefited from the program once he entered high school. Our child's resource teacher has complimented and definitely mentioned that he's definitely applying what he learned and obtained in Arrowsmith and that's the reason why he's done so well along with his effort and persistence to do well and keep on going.

Some of our child's marks were in the eighties, but our child's overall percentage was 72% in grade 11. Our child is enjoying school and has a great attitude towards attempting new things especially challenging subjects. Our child's frustration level has improved dramatically even when it's something in which our child has to work much harder at in order to understand or finish.

Our daughter is now in grade 9. She is much better at everything. She is happier with herself. The Arrowsmith Program helped her a lot. Her overall average is 71%. She is in a combination of applied and academic courses but next term she will be in all academic courses. She can get resource help if she needs it but she rarely does since she doesn't really need it.

Our child has made reportable change from a very shy student to a confident one. Our child loves high school (grade 10) and is heading for the honor role. Our child does homework independently without help at home, brings home almost perfect marks in tests. Arrowsmith changed all of our lives. Most important, it gave our child the ability to learn, how to learn. Thank you. Thank you for giving our child a chance to enjoy and understand education.

We have noticed positive changes since our child started the Arrowsmith program. School work has always been a struggle for our child but our child started to feel more confident about trying new things. The writing exercises our child was taught are still applied to this date when our child feels overwhelmed in high school (grade 9). Our child's organizational skills have improved and our child is now able to keep a neat and organized agenda. Our child has learned that though our child has a L.D. our child is able to succeed. It's just a matter of working a bit different than the rest. It has been a very positive experience. Thank you for providing our child the opportunity to attend the program. It has been a privilege.

Our child's academic achievements especially in first term of high school are most noticeable.

Since our child entered the Arrowsmith Program, our child has developed a lot of skills necessary to achieve an academic diploma. Our child started out in a grade 3/4 reading level. He was only in the program for 2 years, as we became aware of this through his home school. We made the change to go to Transfiguration and we have not looked back. Our child is now in grade 9. Our child's highest mark was in math with a mark of 85. I give credit to the teacher. The teacher is very dedicated to the children and wants them to succeed. This shows with the success of our child. We are truly grateful to have been a part of the teacher's career. The Arrowsmith program should be made known throughout the entire school system. If this program stops, I believe we will not be able to help our children the way this program has in so many ways. The special techniques this program has, have proven a success for our son. Once again I strongly believe in the Arrowsmith program and of all the schools to have this, I would suggest Transfiguration as the teacher is a perfect teacher for this. If you have any questions you would like to ask, please feel free to contact me any time.

Our son is in grade 9 now. His overall average is 80% and in math he is getting 90%. He is in applied but will be moving to academic courses. This is due to all his progress from his two years in Arrowsmith.

STUDENT OBSERVATIONS OF IMPROVEMENTS AS A RESULT OF PARTICIPATION IN THE ARROWSMITH PROGRAM IN THE TCDSB

The following comments were written by 115 students in the Arrowsmith Program in the TCDSB from May 1999 to December 2006 stating where they have seen improvements as a result of their participation in the program. The comments are identified by date and student grade at the time of the comment. For confidentiality, all names have been deleted.

High School Students

06/01/99 Grade 10

- when I review I now can pick it up quickly – before I would have to relearn it completely
- memory is better – focused more – can listen better
- get main idea of what is read better – can understand better especially instructions
- can concentrate more on what teacher says – can figure out what teacher says and wants done
- reflexes are better when playing a game

06/01/99 Grade 10

- more confident
- now in advanced science, even in general science last year I couldn't understand, now I do and I am in advanced
- times tables – know them more, can add better
- don't act up as much – can stay still more and focus
- memory has improved – can remember facts

06/02/99 Grade 10

- marks were getting higher last year and beginning of this year
- easier to do homework and easier to think
- 64% advanced grade 10 English
- easier to write than used to be, easier to edit work

06/03/99 Grade 10

- can now understand math better
- I speak out more, not as timid
- can think faster when asked a question
- can get to the point in writing
- have more friends, more sociable
- understand what people say
- can remember lecture that teacher gives, can remember information from one day to next

06/01/99 Grade 10

- more confident, more willing to try things that would not have before
- faster at everything – listening skills better
- remember more stuff – can follow directions better
- got 84% in math
- can read and understand better in English, easy to write paragraphs and essays

06/02/99 Grade 10

- in reading and spelling – looking at words: word patterns I can spell them – but spelling is still a problem
- if I read a whole paragraph I understand the main idea
- I'm really good at math – I am much better than last year. I really understand it

06/03/99 Grade 10

- am more responsible and have more patience
- memory is sharper – motor skills better
- can focus more attentively
- writing is easier
- can answer questions without taking a lot of time
- can understand things better

06/02/99 Grade 10

- writing is easier and neater
- understand more in science, biology, math
- can remember more information
- reading is easier and can read faster so finish tests faster
- can talk better – don't get mixed up with words like before

06/01/99 Grade 10

- drastic improvement in math – went from basic remedial to general math with 96% average this year
- slight improvement in cursive and motor skills
- some change in understanding what is read
- can edit more effectively and sees mistakes

06/02/99 Grade 10

- can write better, once I start ideas the writing starts to flow
- doing well in English and can understand math
- memory is a lot better – can remember dialogue from movies and books better

05/31/99 Grade 10

- can spell better than last year
- more able to focus and understand what teacher is saying
- can remember a little more
-

06/02/99 Grade 10

- reading – don't need to sound out – quicker to read
- understand concepts especially math concepts
- don't have as much difficulty focusing, easier to understand instructions

06/03/99 Grade 9

- writing is easier
- pronunciation is better
- can read words better
- understand better

05/31/99 Grade 9

- can concentrate better in math
- can work faster
- now when someone shows me how to do something – can remember it – before could not

06/02/99 Grade 9

- writing is neater, easier to put thoughts on paper
- can read some of large words better and understand novels – the concepts are easier

06/03/99 Grade 9

- reading is a bit better
- can add better

06/03/99 Grade 9

- starting to understand science
- writing is easier
- can remember what teacher says from one day to next
- hand writing is neater
- can pronounce words more easily

06/03/99 Grade 9

- English is easier to understand than before
- can work faster in math when doing calculations
- can understand and concentrate better
- don't have to ask for help from parents anymore because I can figure out what to do on my own

05/31/99 Grade 9

- baseball better – eye hand coordination – used to miss ball, last couple of games got 4 home runs
- tell time quicker, can pay attention better
- reading is a lot better and easier – especially big novels
- doing math in my head is a lot easier

06/01/99 Grade 9

- reading is much better – in acting school I can read scripts and sound out words
- printing is better
- math a little bit better
- can remember phone numbers
- can comprehend what I read where before I just read words without understanding

06/03/99 Grade 9

- reading – can read more fluently, quicker and with understanding
- math – understands when teacher explains
- can explain things to people better
- don't get mixed up in my head when I am talking
- understand things quicker
- can remember messages on phone

06/13/00 Grade 9

- I think the program has helped me with reading and my memory

06/14/00 Grade 9

- math is different. I can read the math questions. I can answer questions faster.
- I can also draw better
- my memory is better
- if it's at St. Pat's next year, I want to be in it.

06/06/01 Grade 9

- I feel more confident, I can read easier

06/14/00 Grade 9

- it helped me, it improved my understanding of what questions teachers are asking you – when I read sentences – I used to not understand and now it is easier
- I would like to be part of the Arrowsmith program next year. I have put myself to the ultimate max.

06/06/01 Grade 10

- I have a better memory

06/14/00 Grade 9

- improved my memory – tell time better
- improved my adding and subtracting.
- better understanding things.
- maybe I will be in Arrowsmith program next year

06/06/01 Grade 9

- my memory is much better
- math is easier
- reading is easier
- I am more confident
- history: 84%
- math: 62%

Elementary School Students

05/30/05 Grade 8

I have seen improvements in myself in math because before I could not divide. I have seen improvements in my writing and the amount of time I could write for because before this much writing would hurt my wrist. The one thing I have seen most improvement in is my memory.

09/16/04 Grade 5

My handwriting has changed. I understand my math at Grade 5. My spelling is going good. I can read better. I read Chapter books. For Math I do it neater in my notebook. For Science I don't get D any more. I mostly get B's and my report card is all A's except 2 subjects.

05/10/05 Grade 5

Teacher Reports: Her speech is much clearer; she is pronouncing the endings of most of her words. She still has difficulty with some sounds, i.e. nest=ness.

05/26/05 Grade 6

I also read better. I got 93% on the book I was reading. This year I read more than I used to do. I think I read 8 chapter books.

05/11/06 Grade 7

I have improved in reading because I can sound out the words, spelling is getting easier too because of sounding it out. In math I'm getting good marks like 75% to 98% in quizzes and tests. I'm also finding myself drawing better than I thought I would ever be. I am more creative now.

05/24/05 Grade 4

I have changed in reading and writing. I'm better at it than before and I'm proud of myself. Reading and writing is easier for me. I improved in my reading the best. I can read picture books but I am afraid to read in front of my classroom. I think people in my class would laugh at me but I have improved in my reading and some of my friends would too (laugh at me) and then I will have no friends.

05/11/06 Grade 5

I have seen improvements in my reading and I can sound out. My reading is okay and I can read big words and my reading is good because I can read a big book.

06/07/05 Grade 5

Where I have seen improvement is in reading because I can read a lot better. My hand is writing faster. Looking over the year I was not good at reading. It sucks that people would be reading bigger books than I could so that is why I think reading has improved because now I read the same books that different kids read and also my spelling got better because I could not spell but now I can so that is why I think my spelling has improved.

05/11/06 Grade 6

Now I do my homework more often and I am pushing myself to work harder. It is easy for me to learn shapes faster and work faster. I have been improving in my writing.

05/09/05 Grade 6

Since I have been in the Arrowsmith Program I have found writing easier to do than before. I also have found I'm quicker in finishing work than before. I have been doing my homework more rapidly and I work the keyboard faster than before. Also I have improved at writing so I can write. I found improvement in math, science and reading. I found I read more than I did before. When I type on the computer a lot my wrist doesn't hurt as much as it used to. I have forced myself playing more sports than I used to.

05/11/06 Grade 7

I have seen improvements in my writing. I find I can write clearer than I used to. I am reading faster than I was and I understand what I am reading better. I can do Math and Science easier than it was. I am also getting higher marks than I was. I can come up with ideas faster than I could before. My spelling has improved.

09/16/04 Grade 5

I think that I changed from Arrowsmith because my patience is improving. I am becoming better in spelling since I started and better in reading.

05/31/05 Grade 5

Math has gotten easier for me since I've been in Arrowsmith. I have seen improvement in my writing, spelling and reading. In my writing I can write neater and make my letters clear. I can spell out words better and I check my spelling by sounding it out. My reading has improved because now I pronounce each word I read. These are the things I've also improved in - my memory and math - in memorizing things I take about 2 seconds if I'm really concentrating but if I'm not it will take longer. In math, I can find out each question without having to gaze into space, I can do it a lot faster now.

05/11/06 Grade 6

I've been doing really well in math. I moved up into the next level and reading, writing and spelling is better, I see myself doing really well and so does my Mom, Dad and teachers. I feel I know more and can now do stuff that I could not before.

05/30/05 Grade 7

My Grade 7 days were hard because I cannot spell but I improved. I want to be Grade 7 level but it is okay because it is getting better a lot easier. I learned math and spelling a bit.

05/11/06 Grade 8

I have seen improvements in my reading and writing. I think I am getting there fast. My writing improved the most. My spelling is getting there. I think the Arrowsmith program makes me better.

05/11/06 Grade 7

I focus better and see improvements in my reading and writing. I'm not distracted or playing. I'm sitting. I take more time. I have seen improvements in all my programs since last year. It feels like I can do everything that I do here in my Grade 7 class.

05/31/05 Grade 7

I am learning to remember to listen properly. I used to always forget what they say before, but now I can remember properly.

05/11/06 Grade 5

I have seen improvements in my reading and a bit in my spelling. I have seen improvements with my memory and math as well as my grammar and punctuation. I have seen improvements in my writing.

05/11/06 Grade 1

I have seen improvements at school in reading and writing (numbers and letters), ball hockey, better focused on work.

05/11/06 Grade 6

I have seen improvements in my reading in school and at home. I have seen improvements in my writing skills. I am able to read big words. I have seen more improvement in my spelling. I improved in understanding things.

03/26/03 Grade 7

I improved in all areas like in reading and in writing and in copying and in understanding what the teacher is saying and I got very good in math too.

03/26/03 Grade 7

I have improved in everything. In Arrowsmith I have improved in reading, writing and math. My memory is a lot better. My homework is much more easier than before. I like Arrowsmith because it has improved me a lot. I hope to improve this semester.

03/26/03 Grade 6

I improved in telling time, learning how to do faster math questions. I know I got better in reading because it is easier. In supp motor because I know how to count in my head with my lips moving. But the only reason I improved in reading is because of Arrowsmith and my teacher.

05/13/05 Grade 6

I have seen improvements in my math e.g., I can do skipping numbers and my handwriting is way better.

05/25/05 Grade 3

I improved in writing. I can write by myself. Reading, because the teacher doesn't need to read the question.

05/16/06 Grade 4

I have seen improvements in math. I can count better. I can do my Mad Minute easier. I can count up and down by 3 and 2 faster. I saw I can remember stuff that I haven't before that I have to do for Mom. And I can spell stuff that I couldn't spell before. I can make words that don't sound like a word sound like a word. I can do penmanship. I can read better.

05/15/06 Grade 7

I have seen my improvements a lot since September. I have improved in my spelling, writing, memorizing and being able to read fast.

05/16/06 Grade 6

I saw improvements in my reading. I can read really fast and won't make a mistake. My spelling is a little better. Understanding is a little better but I need to understand more.

05/29/06 Grade 5

In Arrowsmith I have seen improvements in my hand writing, spelling and math, telling time and understanding the teacher and better reading and memory. My Mom and Dad seen improvements this year.

05/16/06 Grade 5

I have seen improvements in penmanship and story writing and spelling and reading and a little bit in math and understanding people.

05/16/06 Grade 6

Where I have seen improvements was in reading. When I didn't go to Arrowsmith I struggled to read, but when I came to Arrowsmith it helped me read fast and understand the words. Arrowsmith helped me in spelling because I couldn't spell easy words. Arrowsmith helped me in visual memory because I couldn't remember that many things, but when I did symbol rec it helped me bring all the memories back that I had forgotten.

02/03/03 Grade 7

I feel my reading has improved. I can get ideas down on paper more easily.

05/31/01 Grade 4

Reading, writing, and remembering is easier and is easier to figure out the order of things. Don't forget the date that easily anymore. Its easier to read people. Brocas has helped being better at blending sounds. Don't get tongue tied as much. Writing is much easier and am learning cursive writing. It is easier to learn spelling words.

09/15/04 Grade 5

In my math and spelling and reading I have seen improvements. I can read a book now. I have improvement by doing my homework by myself.

09/15/04 Grade 5

I have seen improvements at school and at home. I improved on art, spelling and math. I improve my basketball and other sports. I am good at reading and learning different things. That I am not shy to people and my friends.

05/26/05 Grade 5

By getting my homework done everyday. I have seen improvements when I do hand writing it is improving my skills to writing letters and improving my math and I learned more math. I improved in my basketball skills and I am good at basketball and I am better at it. And I improved in other sports like soccer, baseball and football and tennis.

05/02/06 Grade 6

I have improved in my math at school because I study a lot of math and my math homework too. It is also easier to study for math tests.

05/02/06 Grade 7

I have seen improvements in my handwriting and I get better every year. When I started I made a lot of mistakes. Math gets better every day of the week.

05/26/05 Grade 5

I have seen improvements in math, science, religion.

05/26/05 Grade 5

I improved in writing and now can help my brother do his homework. I can read a book with him. I do my math myself but I still have a little bit of help with my math and writing. I also improved on my swimming and my spelling.

05/03/06 Grade 6

Now I know how to tell time and I can read a clock. I have seen improvement in my math. It is good and my Mom is happy that she found improvement in my work.

05/26/05 Grade 5

I have seen improvement in my sense of humor. I have improved in my typing on the computer. I have improved in my reading and spelling. I have seen improvements in my ability to make up stories.

05/26/05 Grade 4

I learned to write well and read well, speak well, doing math well. I know how to think now. I improved because of Arrowsmith. I love going to Arrowsmith and there are the two teachers that helped me and thank you for helping and I have learned lots of things from you.

05/05/06 Grade 5

I am getting better at math, handwriting and reading.

05/26/05 Grade 6

My improvements are when I do my work at school and when I do it at home. I do better in math and reading and writing. When I ride my scooter and I am not falling or tripping.

05/26/05 Grade 5

I have improved in math. I have improved in hockey. I have improvements on clocks.

05/05/06 Grade 6

My writing, reading, math, social and listening.

05/08/06 Grade 5

I have seen improvements in my writing and reading my language books in school. In dance class I remember moves that I knew from last week. Doing better in soccer.

05/26/05 Grade 7

I have seen improvements in my attitude towards things. My behavior at home has also changed. My work because I am more calm and patient. My friendships because I don't like to pick fights and that hasn't happened in a long time. I am always a lot happier than I used to be, laughing at things. I am also improving my work because I show a lot more interest and so I am doing better. I think I have also improved in being more polite and kind not only to people in my family but to friends too. I think my handwriting has improved a lot too. I think I have also improved my spelling skills. I have improved in punctuality, as in doing things in a short time instead of taking longer. I think that I don't take things so hard as I used to. I think I also improved in art. I also think I have also improved at listening to people and doing what they ask.

05/24/05 Grade 6

I've seen improvements in how I talk. I really go in and stop and think about what I want to say. I'm more clear. I've improved in my spelling. I've also noticed that in my class we have multiplication tests and we are only given three minutes and before Arrowsmith I would get 27 out of 100 and now I am getting 100 out of 100. I am really glad I came to Arrowsmith it helped me.

05/17/06 Grade 7

I have seen improvements in spelling, my math, how I talk, and my printing. When I listen to people talking to me it is easier to understand. Arrowsmith has helped my memory so when I learn something I don't have to go over it again and again. I can learn it right away. I think Arrowsmith has helped me a lot.

05/10/06 Grade 5

My reading because I've seen that I can read difficult words. I can sound out more, plus my Tutor said I am improving.

05/10/06 Grade 8

I have seen improvements in my writing; it has gotten smaller. My math is a lot easier than it was before and I don't have as much trouble understanding it.

06/07/04 Grade 8

I think that tracing has helped me with my muscle memory and at copying notes off the blackboard and I'm also a faster writer. Muscle memory because I can remember how to spell words better and hold it in my head. I also think that clocks have helped me with my reasoning and problem solving. L-think has helped me with my planning, strategies and finding the main idea of a sentence or paragraph or even a whole story book. I feel as if skip counting has helped me with my math. I also feel like it's helping me with my mental math. I think that lexical has helped me with my long term memory. Also with my mental math because you get asked math questions before you say your answer.

05/07/04 Grade 8

The Arrowsmith program has helped me in many different ways. Supp motor is helping me in my math. I am finding that I am doing a lot more math questions in my head and faster than before. Clocks is helping me with my reasoning. I can see this when I am telling time. Word is helping me in my writing. I find that I can copy something off the blackboard a lot faster. I am also seeing that I can write faster on paper. L-think is helping me understand things that I read better. I am also understanding people when they talk to me better. Skip Counting is helping me with my mental math. I am finding that when my teacher asked me a question my answer is more automatic.

05/20/04 Grade 8

Over the year of being in the Arrowsmith program, I have noticed that tracing has really improved my ability to write. I have noticed that when I wrote my first writing sample, my hand writing was not so good, but now when I look at my most recent writing sample my hand writing is a lot neater and clear. Another program that has also helped a lot is word. Word helped me in many ways. One way is I noticed my spelling is a lot more accurate. I think word helped me with my spelling because in word you have to memorize symbols that do not mean anything to you so when you see something you know like letters you will memorize words better which makes your spelling better. Supp motor is another program that has really helped me with my mental math. I noticed that I can answer the math questions a lot faster. The program called Clocks has also helped me in many ways. One way it helps me to understand if I do this, then I know this will happen which is called reasoning and cause and effect. I think that L-Think helped me the most out of all the programs. L-Think has helped me to read something and understand what I am reading. I have also noticed that my reading has become a lot more fluent and I stop and pause when I am supposed to.

09/10/04 Grade 6

I think my math has improved. My spelling has improved but it needs a little more improvement. I remember things like what is a verb, and every day things. My organizing has improved a lot.

05/03/05 Grade 6

I have seen improvement in organizing my clothes and work and remembering my chores. In hockey at my practice I have to watch the kids do the drills before I did it but now I'm at the front of the line. When I first came to this school I did big, slow, messy printing and now I do small, fast, neat writing.

05/03/05 Grade 5

Where I have seen improvement is in my reading. I think I am much faster and more fluent. I also see improvement in my writing. It is more neat than before. I am a lot more neat.

05/26/06 Grade 6

I have seen improvements from the program in my writing because I am remembering how to spell a lot more words, my writing is much neater and my words aren't too close together that it looks like one word. I have also seen improvements in my reading because it is more fluent and I don't stutter a lot anymore. When I come to a word I don't know I break it into syllables. It is also helping me with my memory because when I am at home and I hide my wallet so my brothers won't take my money and when I am going to the store and I need it I can remember where it is.

05/17/06 Grade 4

I can read very good now. I feel very good about myself. I have confidence in myself. I love the Arrowsmith program and I love reading.

05/03/05 Grade 5

Since I've been in the Arrowsmith classroom I've improved in a lot of things like I can read 5 or 6 chapters in a chapter book. Plus I can write much faster. Reading and writing is much better than playing because you could be a famous writer and stuff like that. And that's why I like reading and writing now.

05/18/06 Grade 6

I have seen that my writing has improved and the same with my cursive. I am getting better at remembering. I also have improved in remembering all sorts of things. I have gotten better at adding and subtracting. I have improved in telling time faster and in problem solving.

05/11/05 Grade 5

I have seen improvement in my reading, writing and spelling. I sound out words or look them up in the dictionary. I can read a chapter book and not stop at every word in the book. I can write a story and not stop. I like to read and what was stopping me from reading before was I did not know how. I like to write words and stories but before I had a lot of trouble. I have books and books that I can write in but before I could not. I love to spell words. I have two books that I made of words that I didn't know how to spell before. Now I know all of them and I have 9 new books. I love to read, spell and write everyday.

05/03/05 Grade 5

Where I have seen improvement is in my memory, reading and writing. I used to hate books but since I did Arrowsmith I read all the time and also I can remember a lot now. My writing has also improved. Before I wrote all messy and huge but Arrowsmith changed that. Now I write nice and clean and use capitals. Arrowsmith has changed my whole life, pretty soon I can be a genius like I want to be. Before Arrowsmith I didn't fit in, I didn't get the work we were doing at all in grade 1. I couldn't even spell but now I can spell more words than I ever could imagine. My older brother used to tease me and call me names because I didn't know one times one but now I know it. My brother never teases me now.

05/18/06 Grade 6

Tracing and word help me in writing faster and neater. Sup motor helps me with mental math and telling time. Clocks helps me reason better. L Think helps me with reading, and lets me see a

situation and get the main idea. All this is helping me I can see in my regular class. It's easier to copy and I work faster and more.

05/17/06 Grade 5

I have seen improvements on my keyboarding on the computer and in my writing and my cursive and in my reading. All of this is helping me to become a more super thinker.

05/16/06 Grade 4

I have seen improvements in L-Think because it helps me read better and clocks helps me tell the time. Lexical helps me remember. Sup motor helps me in math and adding and minuses. Word helps me write fast and tracing helps me color in the lines.

06/04/01 Grade 6

It's helped me in a lot of ways. I'm able to focus better. Printing is easier. Reading is good. School is better.

Teacher reports: Student is calmer and willing to persevere.

06/19/03 Grade 8

Math and reading have improved. Memory is better. Handwriting is neater, it flows and is faster.

Teacher reports: Speech is much clearer – flows more easily – more co-operative.

06/11/99 Grade 6

Yes, I can spell. I'm faster on my keyboard. I'm a bit better at math, I understand it a bit better. I usually understand it and before I had to ask a few times to get it. It helped me to pick up speed in reading. I can pick out the main idea easier. I can tell time better.

06/10/99 Grade 7

A little bit more in reading and spelling. It's easier to sound, I can sound out and remember more. It's becoming easier to read. Math is easier. I was always good in math but now I don't have to ask as many times. I am organized – I see something better from being in the program 5 months – spelling and reading.

06/04/02 Grade 7

It's helped me in math. I used to always use my fingers but now I only use my fingers sometimes. In reading I used to skip words and now I don't. It's easier to remember things now. It's easy to understand. Math is easier for me. I know what to do.

06/19/03 Grade 8

Since starting Arrowsmith, I have seen improvements in math, writing, being able to put ideas on paper and improvement in written work. I am working at or close to the same place my friends are at. I don't get anxious when doing tests.

06/14/99 Grade 7

I've learned to tell the time better. I've learned to understand what people are saying better. I understand easier. My handwriting has gotten better. In math, I still have troubles learning but I'm beginning to learn faster. I'm taking instructions better.

06/14/99 Grade 5

Spelling and math are easier. I didn't know my times tables and now I know some. I can spell a lot better. It's easier to tell time. My reading and writing have improved. I like to write stories.

06/14/01 Grade 7

Definitely my reading has improved. Math is easier to know what to do. I tell time now. I see improvement in being able to reason.

06/14/99 Grade 8

If I'm watching Jeopardy – I get the answer, I get the little clue in the question. Reading is easier – there are big words the smarter kids can't get and I can get them and people are surprised. I don't have any trouble with math. It's easier to remember things I have to do.

06/14/99 Grade 7

Math – I'm able to figure out things easier. I answer a lot quicker. I read quicker and understand easier. I remember a lot and I'm remembering easier.

06/14/99 Grade 5

It has helped with my handwriting. It's readable. I can read my work now. I can read clocks.

09/13/04 Grade 5

I have an easier time remembering things at home, like feeding the cat. Reading has improved. Phonics are improving. Math is a bit easier.

06/12/06 Grade 6

Improving in arithmetic, math and grammar. At home I improved in keeping my room clean and keeping organized and keeping the house clean. I have improved in a lot of stuff in school.

09/16/04 Grade 6

I am improving in lots of things this year. Like spelling and reading and working.

06/09/05 Grade 6

I have improved a lot this year and last year because my writing is a lot better and I got 18 out of 20 in a science test. I am doing well in the Arrowsmith class and in testing and I'm getting along with my class.

06/13/06 Grade 7

I'm happy because I've improved in stuff that I wasn't good at. I'm doing okay upstairs in the regular class and I'm doing well on my tests and I'm doing very well in hockey and in other sports like basketball and lacrosse. I'm doing very well in math and my tests.

09/13/04 Grade 6

I am better able to organize myself.

05/31/05 Grade 6

Speech is much clearer. Reading has started to improve. Starting to sound out words.

I have seen improvements in my reading.

05/29/06 Grade 7

I have seen improvements in reading. I have come up three to four grade levels and I can read better in class. I have seen improvements in math.

06/09/06 Grade 5

My spelling is getting so much better. I can write better too. My work is much better too. I've got good in math too and art and gym and music. I'm reading better and I'm reading big books now too. My Mom thinks my reading is better and I read at home with my friends and I just got the book and I'm on page 61.

06/09/06 Grade 5

I see improvements in spelling, writing, and my awareness and reflexes. When I play sports, I play better. I can catch a ball better and kick and throw better. I also play video games better. I am more organized now and neater.

06/09/05 Grade 5

I am improving in writing, remembering phone numbers, reading, spelling and telling time. Now I am going to talk about science. Last Tuesday, we had a test and it was about space and I got 19 out of 20 and the last question was a tricky one.

06/09/06 Grade 6

The things I think I've improved on was writing, memorizing things like homework and sounding out words. I think that they all help me because I focus better, write better and remember things better. In science I think I'm doing better in doing homework and my projects.

06/09/05 Grade 5

I have improved on writing, my speech and my reading.

06/13/06 Grade 6

I have seen improvements in my writing, reading, spelling and typing. I have seen improvements upstairs (in my regular class) in my listening, getting my work done on time. I have seen improvements at home when I am delivering papers. I am more accurate when I have to count how many papers I need.

06/09/06 Grade 5

I love tracing – it is my 2nd favourite subject. I rock at it, it's helping me in writing. Word I am on 4 symbols and it's helping me in spelling. Upstairs (in my regular class) I am doing good in math – I went from C to straight A in math. Thanks to Arrowsmith my life has gone from hard and unhappy with my work to the opposite of what I just wrote and at home it's just as good. I can do more than ever. So I tell you that Arrowsmith is the best thing that ever happened to me in every way and every thing. If I were to give this program a rating stars here is how many you would have ***** stars (five stars) and if my improvements were shown on a graph it would look like this (student has drawn a graph demonstrating the upward scale) and I give it three hairy thumbs up. If I was to recommend this program it would be to the whole world.

06/09/05 Grade 6

I can write in my diary faster.

06/13/06 Grade 7

In the regular class I have seen improvements in my math. It's not as hard as it used to be and I'm one of the best in the class. I find math fun and challenging. I have improved somewhat in drama, like remembering my lines and being more comfortable on stage.

06/09/06 Grade 6

I have improved a lot this year because of this program. I have improved in reading and math in 2 years. I have improved in my homework. In all my math tests upstairs (in regular class) I get A+ and A and I like gym and art. I won the history fair this year, me and three other people.

06/23/05 Grade 7

The improvements that I have seen are my behaviour, spelling, writing, reading and math. With the improvements in my reading and writing skills, I am now in a regular language class. I've also seen improvements in my afternoon work (in regular class) like history, geography, religion and science. With these improvements in my afternoon work, I now participate and raise my hand when I know the answers instead of not raising my hand at all. In all of my work I have no modifications whatsoever.

12/15/06 Grade 9 (post Arrowsmith)

I am currently attending Don Bosco in Grade 9. I was a student at Transfiguration of Our Lord C. S. and was a part of the Arrowsmith program. This program has changed my life for the better. I was a student who would walk into class with my head hung low. My grades were very bad. But as I attended Arrowsmith and received all the support that I needed from my teachers and parents, everyday was an improvement. So, I ask you to please continue the Arrowsmith program in Transfiguration school. This program should be in every school. Thanks to everyone who gave me the opportunity to achieve my goals.

05/16/05 Grade 5

I have improved in my writing speed but not my spelling, my writing is more neat! Thanks to symbol rec. I can memorize things better. I can read better, I can read novels. Right now I am reading a Series of Unfortunate Events.

04/20/06 Grade 6

I have seen improvements in spelling, reading, writing especially, and listening.

05/16/05 Grade 7

I have seen improvement in my listening and my work I do in class and the homework at home. My attitude is getting better with other people and I don't get angry so often and my behaviour is a lot better in class.

04/18/06 Grade 8

I have seen improvements in my writing, my reading and my math. I can understand math a lot more easily. I made a big improvement in my science, history and geography.

05/16/05 Grade 5

I have seen improvements in my reading and writing and I have also seen improvements in my spelling. I have seen improvements in my homework and in my projects.

04/24/06 Grade 6

I have seen improvements in reading, writing, spelling, math and understanding the teacher. These are some of the skills I have improved on.

04/18/06 Grade 8

I have seen improvements in reading, writing and memory.

05/16/05 Grade 5

I am getting better at writing.

05/16/05 Grade 7

I have seen improvement understanding what I have for homework and what to do. Understanding what I am reading. Writing better. Listening and knowing what my teacher is telling me. Finishing my homework all the time. Counting faster for math.

05/18/06 Grade 8

I have see improvements in my writing. Doing tracing has really helped me. By doing Broca's I find it is easier to sound out words. By doing phrases, it has helped me with my memory. (I remember more). I am more organized now by doing the Arrowsmith program. By doing and mastering clocks, it made me think much faster for finding solutions. I seem to be more organized with my space.

05/01/05 Grade 1

I have seen improvements in my writing and my speech. Telling time and my work is better.

04/24/06 Grade 5

I have seen it help me improve on getting better answers in class. I have some improvements in my math skills and my reading. Before I had a hard time, mixing up 'd' and 'b', but not anymore.

04/19/06 Grade 7

I have seen improvements in my homework and in my studying for tests. My math is better. The L-think has helped me a lot.

04/18/06 Grade 5

I have seen improvement with spelling and with math. And when I am not spelling some words pop in my head and when I go to spell I know the words.

STUDENT COMMENTS FROM QUESTIONNAIRES COMPLETED JANUARY 2007 ON THE ARROWSMITH PROGRAM IN THE TCDSB

The comments were written by the students in the Arrowsmith Program in the TCDSB on the questionnaires they completed from November 2006 to January 2007. The comments are identified by date. For confidentiality, all names have been deleted. Some of these students are also represented in the student observations on the previous pages.

11/30/06

Arrowsmith has helped me in so many ways like spelling, reading and organizational skills. My writing has become neater I hope.

11/30/06

The Arrowsmith program helped me to read and write and remember my homework and that is why the program should stay, please.

11/30/06

It helps me with my writing, telling time quicker. I would have to say that it almost helped me with everything. I think that it would help my sister because she is like me went I first came in my class.

11/30/06

Arrowsmith has helped me so much I can read, write, spell and do math better. I hope all the kids that need Arrowsmith get an opportunity to do it like I did.

11/30/06

Arrowsmith helped me not only in school. I had it pointed out by family members that I do better in swimming lessons. Also I can build things, Lego, wooden blocks, whatever. It helped a whole lot.

11/30/06

I have gotten better at reading stories and at spelling words. I have gotten better with homework and telling time.

11/30/06

I like Arrowsmith because it is fun and teaches you math, time and reading.

11/30/06

I like Arrowsmith because it helped me with my homework and my work.

11/30/06

I feel I can understand what the teacher asks me to do better. I like doing my homework now because I can do it.

01/10/07

I think this program is great because it helps you in a lot of things that you need help with.

01/09/07

We can meet and make friends in this program and it helps people with problems.

01/10/07

The Arrowsmith program has helped me in some ways.

01/09/07

I think the Arrowsmith class should go on in more schools because it does work and I know a lot of people that love it and want to be in this program. I like it a lot and it's fun and I really like this class and we have a very nice teacher teaching us.

01/10/07

I think that this program should continue because it really helps me improve in writing, reading, focusing, and especially telling time. I think this program will help kids in the future to learn and to understand what they are doing.

01/10/07

I want the Arrowsmith program to continue.

01/09/07

I love Arrowsmith. It helps me a lot. I would like it to continue. It is very helpful.

01/10/07

I really think the Arrowsmith program has helped me but no one in the regular classes really understands who Arrowsmith is for, like that it's not just another program for dumb kids that you actually have to be good at some things to get in.

01/09/07

I think this program should stay and it should be added to other schools. This program has helped me a lot.

01/10/07

I think they should put more Arrowsmith in schools. It really helps me a lot.

12/18/06

I liked the Arrowsmith program. It helped me to get better at all I do. I would like to thank my teachers for teaching me in grades 6, 7 and 8.

12/14/06

The Arrowsmith program helps me in social studies because in my class there are only three better than me and now I am better in social studies.

PARENT COMMENTS FROM QUESTIONNAIRES COMPLETED JANUARY 2007 ON THE ARROWSMITH PROGRAM IN THE TCDSB

The comments were written by 31 parents of students in the Arrowsmith Program in the TCDSB on the questionnaires they completed from November 2006 to January 2007. For confidentiality, all names have been deleted.

I think Arrowsmith program has been a big help to my child for a lot of things not just for school but outside of school too. I think Arrowsmith program helped my child a lot.

Excellent program, should be available to more children. Our child would not be at the academic and social level our child is at without having been in Arrowsmith.

Our child has been in the Arrowsmith program for many years. If our child hadn't had the opportunity to be in such a great program our child would not be working and achieving the goals our child has set out. Our child was very fortunate to be in such a wonderful positive learning program.

This is a great program for someone who has a learning disability. It helps the student in many areas and it should be offered throughout the Catholic School Board.

Our child has made a great improvement this year. He is excited about learning and tells me everyday what he has accomplished. I didn't understand this program at first, but now I see our child wanting to read and excited to learn. So far I am pleased with the results.

Our child showed a high level of anxiety, loss of self-esteem and confidence when certain subjects like math and French were taken away. However, our child feels better now that math is added back on to the curriculum. Excellent program – Arrowsmith. Excellent teacher – thank you so much.

If our child had not been rescued, our child would have completely shut down and would not be an active participant in school. Our child sees the improvement and is willing to work hard to achieve results now. Reading improved phenomenally. Tracking greatly improved.

I really appreciate the Arrowsmith program because I see that our child is very inspired to go to school everyday and our child changed a lot towards learning and understanding the academic subjects. I really hope that the Arrowsmith program continues to help our child prepare for the future. I also thank the teachers who show support and patience towards our child.

Our child started to color within the lines after about 3 weeks of the Arrowsmith program. I had never seen our child do that before. When our child was in Grade 1 he did not want to go to school at the end of the school year. Throughout the summer our child was scared of having to go back to school. Prior to Arrowsmith, we did an hour of homework each day throughout the school year and our child was still (in quite a few cases) just where he was before Grade 1. After starting the Arrowsmith school program he looks forward to school every day and our child's printing has improved greatly as well.

This is our child's 1st year in the program. I can already see a change in attitude. Our child is much more positive about school. Our child is managing time and to complete assignments and wants to do it alone. Our child has taken the responsibility for the work and there has been an improvement in our family life as well.

Our child has been in the Arrowsmith program for 4 years. When our child started in Grade 2, our child was not able to recognize all the letters of the alphabet or numbers. Our child is now able to read with little assistance. Since having some success in school, our child has a more positive and happier outlook on a daily basis.

The biggest change has been in our child's attitude towards school. Our child no longer fights about going to school everyday. Our child is also trying to read alone which our child would not have done before. Our child's frustration level has decreased and self-esteem is improving. Through this program our child is learning that differences are okay and that it doesn't mean that you are "stupid". Our child is realizing that he has something to offer.

During our child's time in Arrowsmith, our child has become much more confident and more of a risk taker with new tasks. Our child's ability to focus and complete homework has improved greatly. We have noticed our child's strategies during board games has improved and become more advanced.

Our child has improved greatly in the Arrowsmith program. Our child's self-esteem is the most noticeable trait to us. The teacher has been the single most contributing factor. The way the teacher has taught the program and shown our child how to tackle any number of problems is extremely important to our child and to us the parents. We have one more year to benefit from Arrowsmith and would strongly advise the school keep this program.

There is too much homework given. My son is getting bored with the program due to the fact that he has to do the same thing at home that he has done all day, even on weekends.

We (our family) are very pleased with the overall improvement our child has exhibited. We are looking forward to more improvements with the confidence we have in the Arrowsmith program. Our only added hope is for our child to develop more friendships with kids his own age. This is our only present concern. Thank you for assisting us in our child's growth.

The biggest area of improvement for our child is thought to print. Our child always had great ideas but could not write them. Now our child can write beautifully thanks to the Arrowsmith Program.

Our child is doing so well – our child can read and that is the best gift school or anyone can have. Our child has always wanted to learn and now is doing so well – every year we can see his smile growing. The Arrowsmith program has enabled him to do this.

Without this program, I feel our child would not have progressed enough to be integrated with non-LD children and classes, in which case her future would have looked pretty dim. This is an incredible program and the teacher is incredible.

I am so thankful for this program because it helps my child so much in every way, such as to be strong and confident despite our child's weaknesses. Since taking Arrowsmith our child learned how to focus in general, our child can now write legibly and I would say our child's social and personal skills were a great success. Therefore this program should stay continuously.

Our child understands the learning difficulties and is confidently working towards making a difference. Our child looks forward to the day when our child is a strong enough learner to integrate and so are we. I love that the TCDSB is willing to put funds towards solving our child's problems and is not just putting a bandage on them. Thanks so much.

Our child, prior to starting the Arrowsmith program was not doing very well in school. Today in our child's Grade 6 class, our child is the top student. The teachers refer to him as "self-motivated, over achiever, polite, and organized." This was not the case 3 years ago. This program has given him the skills to achieve high goals in his future education, that possibly he would have never known. This program works.

I have noticed a great change in my child and without the Arrowsmith program I don't know where we would be but I do know that it wouldn't be good. This program should be everywhere - for everyone - everyday. What about a summer camp?

Our child entered the Arrowsmith program with no short-term memory and a very short attention span. Due to an auditory processing disorder, our child had difficulty listening and following instructions. Our child's organizational skills were poor and our child was afraid to attempt tasks that were overwhelming. After two short years, our child developed short term memory and our child's attention span greatly improved. Our child was able to study for tests and with assistance follow multiple directions. Our child's reading improved significantly and our child began to attempt to perform tasks alone.

Although our child has not yet shown improvement in focus and initiative, our child has a much more positive view on school work and better self-esteem.

The Arrowsmith program has been extremely beneficial for our child in every aspect. I look forward to our child's continual progress in the program and working towards the goal of self-advocacy and eventual integration into regular school programs with minor accommodations.

The Arrowsmith program has been amazing for our child. Our child feels much better. Our child's comments to me are that he likes that it is a half day program and that he is not being pulled out of the home room class at different times of the day. Our child feels less "labeled" than at the old school.

Our child has been designated Gifted-LD in the school system. There are certain things that our child has never had difficulty with because of our child's strengths. There are areas that, no matter how hard we worked on them, they continued to be a difficulty and a source of frustration, eg., telling time, making change, printing neatly, using a dictionary. In just 3 months we have seen an improvement in our child's (1) printing (able to print on a line, better formation of certain letters) (2) telling time on our kitchen clock (analog) and (3) recently our child initiated the use of a dictionary and quickly found the word – "random" - when I questioned how he was using it.

Our child has embraced the Arrowsmith program with enthusiasm and hard work. We have seen improvements in our child's ability to concentrate on specific tasks, to assume greater responsibilities and to attempt/complete homework. We have seen some improvements in reading comprehension. We are very encouraged by the progress to date.

Almost all of the above are a great concern for our child. However, our child is much happier, now at school, even in this short period of time. Our child is enthusiastic regarding Arrowsmith because our child receives positive feedback and encouragement. Our child listens to the teacher very well and always does homework in all subjects. Our child is beginning to understand how important reading is. Our child is very bright and tries to be involved in everything. Reading is very difficult for our child especially now as our child is in grade 6 and expectations are very high. The Arrowsmith program is very supportive to her and I feel the concepts will be helpful if our child works hard. Everything I have researched myself about children with learning disabilities seems to

be addressed in the Arrowsmith program. I will continue to support my child and I hope the school board does the same.

We feel that the Arrowsmith Program has helped our child with writing and focusing, and integrating into the mainstream classroom. We believe the program is a valuable asset for our child with the specific learning disability.

TEACHER COMMENTS FROM QUESTIONNAIRES COMPLETED JANUARY 2007 ON THE ARROWSMITH PROGRAM IN THE TCDSB

The comments were written by the teachers for 47 students in the Arrowsmith Program in the TCDSB on the questionnaires they completed from November 2006 to January 2007. For confidentiality, all names have been deleted.

This student prior to Arrowsmith had difficulty with language: couldn't form sentences orally, poor reader, little written output, poor in Science, did so well in Arrowsmith she was re-integrated into Math in grade 7 and completely re-integrated for all subjects in grade 8; Won the science award in grade 9 and 10. Was offered the choice of moving to Academic math but opted to stay at the Applied level.

This student is in a full academic program in high school with no support and was on the honor role in grade 9 and 10. Also won the science award in grade 9.

This student has been integrated for Math and Science for 2 years and is now fully integrated for all subjects with no modifications.

This student is now fully integrated for all subjects with no modifications except for History and Geography.

This student achieved level 3 and 4 in EQAO testing and was demitted from AP; currently in grade 9 doing well and was de-identified (as LD).

This student is currently in grade 10 at Cardinal Carter, doing very well, with no support.

This student is currently in grade 9, applied stream with some support for organization and extra time on exams; was in AP for 1 year in grade 8.

This student is now doing very well, is fully integrated in the Gr. 8 classroom (only comes for 2 periods of AP). Happier and more confident with his success levels achieved.

This student has demonstrated the most growth of any of my students in the time I have spent teaching Arrowsmith. This student has made dramatic gains socially, academically and psychologically, resulting in a happy, proud and eager to work student. This student is now integrated for math and language and doing very well.

This student was at a grade 1 reading level prior to Arrowsmith and is for the first time reading chapter books (novels) for fun. Prior to AP had 80% of his program modified. He is now re-integrated into Math and Language with no modifications. The growth in this student's desire to read, cursive writing and excel in language has brought the student's mother to tears during parent/teacher interviews.

This student is currently in grade 9 and doing very well.

This student is being progressively integrated in the Grade 8 class, is fully reintegrated in Math and Language with no modifications, is confident, happy and doing very well – applying for Rosedale Heights School of the Arts for Gr. 9.

This student has been a very focused and hard working student. This student is now a lot happier, comfortable with self, peers and not afraid to try new things and is re-integrated for Math without modification.

This student is currently in grade 9 and doing very well.

This student is currently in gr.11, in applied stream, doing very well, 0.5 period/support/day each term, doing very well, independent worker, written work is much improved, can express himself verbally and in writing whereas prior to AP had difficulty getting thoughts out orally and on paper, ideas were disjointed; now drives a car and works part-time; was in AP for 2 years; kept himself back in gr. 8 to have 1 more year of AP before going to H.S.; brother was in AP; sister still in AP.

(twin of above student)

This student currently in gr.11, in applied stream, doing very well, 0.5 period/support/day each term, doing very well, independent worker, written work is much improved, can express himself verbally and in writing whereas prior to AP had difficulty getting thoughts out orally and on paper, ideas were disjointed; now drives a car and works part-time; was in AP for 2 years; kept himself back in gr. 8 to have 1 more year of AP before going to H.S.; brother was in AP; sister still in AP.

This student has made significant gains since starting Arrowsmith. This student's logical reasoning and visual memory for details of objects along with her number sense skills, all reveal good progress. This student has maintained the gains previously made in the Arrowsmith program in auditory memory and non-verbal problem solving and interpreting situations. Due to the positive cognitive gains, this student is integrated for math and geography.

Number sense and Numeration – 76%, Patterning and Algebra - 77%, Data Management and Probability – 68% - Term 1

This student's ability to focus and concentrate has greatly improved. This student works very hard on the cognitive exercises for 30 minute periods now, whereas this was very difficult prior to

Arrowsmith. Reading and writing skills are continuing to be consolidated slowly. This student is more confident and outgoing since entering the Arrowsmith program.

This student has made positive gains in learning motor patterns for writing, logical reasoning and understanding concepts, visual memory and number sense and mental arithmetic calculations. This student has greater confidence in approaching reading activities, volunteering to read aloud to the class.

Grade 7 student

Number Sense and Numeration - 68%, Patterning and Algebra – 75%, Data Management and Probability – 63% - Term 1

Reading – 73%, Writing -72%, Oral and Visual Communication – 68%

This student demonstrates greater confidence in all her learning activities. This student has made very good progress in improving fine motor skills, logical reasoning and understanding concepts, visual symbol memory and number sense and mental arithmetic calculations. This student has maintained gains made with thinking and problem solving and non-verbal problem solving and interpretation of situations.

Grade 7 Student

Number Sense and Numeration - 79%, Patterning and Algebra – 80%, Data Management and Probability – 78% - Term 1

This student has made good progress in strengthening logical reasoning and understanding concepts, problem solving, number sense and mental arithmetic calculations. This student has maintained previously made gains with non-verbal problem solving and interpreting situations and visual memory for details of objects.

Grade 7 student

Number Sense and Numeration - 77%, Patterning and Algebra – 79%, Data Management and Probability – 69% - Term 1

This student is able to complete written assignments faster and neater. This student's tracking in both reading and written work has shown great improvement. This student has made positive gains in learning motor patterns for writing and problem solving skills.

Grade 7 student

Number Sense and Numeration - 83%, Patterning and Algebra – 84%, Data Management and Probability – 75% - Term 1

This student demonstrates greater confidence in all the Arrowsmith programs. This student has made good progress in learning motor patterns necessary for writing, logical, reasoning and understanding concepts, thinking and problem solving and remembering words (Lexical Memory). Homework completion is diligently completed daily.

This student demonstrates greater confidence in approaching learning activities. This student's reading and writing skills reveal steady improvement in both tracking and decoding. Mental math skills continue to improve and this student demonstrates a real willingness to complete math exercises due to his improved accuracy in the Arrowsmith programs.

This student is more confident and skills are advancing. This student's written work is starting to improve which is so wonderful.

This student has made gains academically and socially. He is more confident and attempts tasks more independently.

This student has made wonderful gains. This student is able to read, which has a made great impact on self-esteem and confidence. This student is attempting tasks which he would not try before, especially in written form.

This student has made huge gains in reading and writing. This student was unable to put any symbols on paper before and now the stories are amazing. This student has really made excellent advancement.

This student has made great progress. This student is handling many new Grade 8 academic classes and is doing very well.

This student is handling the Grade 8 program without much assistance. This student is doing many new subjects and is able to handle the workload.

This student has made excellent progress in many academic and social areas. He is progressing very well in Grade 6 courses, without modifications.

This student has made excellent advancement socially. This student had difficulty relating to peers, but now is much more outgoing and confident. This student is doing very well academically in Grade 8.

This student has made excellent progress and is excelling in Grade 6 math, science, health, without any modifications to the curriculum!

This student made amazing progress in only one year. His confidence and self-esteem has improved greatly.

This student is presently at Don Bosco High School. This student's reading and writing improved. Math skills improved as a result of Arrowsmith.

This student was a non-reader when came to the program. This student had considerable difficulties with behaviour and ability to focus. This student made gains in listening skills. This student's letter formations improved and written work was more legible.

This student made steady gains and improved in self-confidence. This student was a non-reader when began the program and was reading at a Grade 3-4 level when left.

This student was a non-reader when began the program. Reading was at grade level when left the program. This student was integrated for math in Grade 7.

This student was a non-reader at beginning of the program in 2000. By December 2003 this student was reading at a Grade 7-8 level and was integrated for language. This student's confidence increased. Comments from friends indicated this student was doing well in high school.

This student is in Grade 10 at Don Bosco Catholic High School and attends the BOLD program (Building Opportunities for the Learning Disabled).

This student's reading, spelling and writing skills improved. This student completed all levels in symbol recognition in 1 year. This student learned to focus on tasks. Confidence improved. This student moved from the area.

This student has improved self-esteem.

This student is in Grade 9 at Michael Power – St. Joseph Catholic High School. This student is in the Applied program and has a 78% average. This student is working hard, enjoys high school.

This student is in Grade 9 at Michael Power. This student's overall average is 76.3% and 85% in math. This student came to Arrowsmith very angry, low self-esteem and very frustrated. In 2 years the change was remarkable, smiled, walked with a spring in step, worked hard, developed and learned many strategies for dealing with frustration. This student's grades improved, completed homework and was happy.

This student is at St. Benedict School in Grade 7. This student has benefited from the Arrowsmith program but difficulties in the home situation necessitated a return to his home school. He is receiving special education help for academic subjects. He made gains in writing and letter formation, legibility, comprehension of written material.

From the beginning of Grade 2 (September) to the end of Grade 2 (June) I noticed a positive increase in this student's confidence, self-advocacy and academic willingness, and I attribute success to the Arrowsmith programming coupled with regular classroom integration. Without her Arrowsmith instruction, I do not feel that this student's individual needs would be adequately met.

This student has made remarkable progress. This student was so fearful when coming to visit, could not even get out of the car. This student's self-esteem has greatly improved, completes homework, has no attendance problems (big problem in home school) completes homework. This student participates in extra curricular activities and said would not have this opportunity in the "other school". This student's reading comprehension has greatly improved and remembers what has been read. This student has a 65 average and has limited accommodations. This student is happy and smiling. Mom said that with Arrowsmith she knows her child will be alright and will succeed as she has life long tools and skills for daily living.

ST. PATRICK CATHOLIC SECONDARY SCHOOL JUNE 1998 & JUNE 1999
ST. THERESA SHRINE ELEMENTARY SCHOOL JUNE 1999

The following comments were written by 20 parents of students and 18 students themselves in the Arrowsmith Program in the TCDSB on the questionnaires they completed from June 1998 and June 1999. For confidentiality, all names have been deleted.

PARENT COMMENTS

Our son is starting to show his true strengths where before they were locked in his head. He used to spend hours on one assignment and still not be able to express his thoughts in writing. However, now he is able to do these assignments much quicker and with great results. As a result, his self confidence has increased a great deal and he is happier. We have seen a great improvement in his organizational skills in all areas of his life. We are very pleased with this program and very grateful that our son was able to participate.

Our son has more confidence to try doing his schoolwork on his own and gets really excited when work he has done is done well and gets a good grade. He seems to enjoy accomplishing things in school on his own. He never would dare try that before. It has given him self confidence.

Our son has made more progress in this year than in any other year!

I want this program to continue because I have seen a lot of improvement in our daughter's marks.

Our son's grade level has gone up and his most recent grade scores would suggest progress is clearly evident.

Our son has shown a great deal of improvement in schoolwork and at home.

I believe the program has done wonders for our son. He seems to be much more confident in all aspects of his daily routine and his enthusiasm shows.

There is a very noticeable change in our son's development. In his other subjects his marks have gone up.

It has helped our son in everything he says and does.

Because our son's ability to express himself has improved his interaction with everyone, this has made him more self confident.

Our son's school work has improved considerably and he understands how to solve problems when he is working on a project. It is helping him understand how to sort through problems with school work as well as in his everyday life.

The biggest improvement is in our son's self-esteem. His skill work has improved. He is happy. He feels that school is important again. I feel that the program is working.

It has helped in math. Before she couldn't concentrate and understand math.

My son has made significant progress in all areas. His school work has improved almost beyond belief.

The program has worked wonders for my son.

He is more able to focus and stay on task longer.

There has been growth in self-esteem. He is much more confident to try new things and has done very well. Before he was more withdrawn and shy and would more or less stay in his room. Now he reaches out to friends and family. He is much more outgoing and has volunteered in many different areas with various groups. He still finds math hard but he tries and tries and doesn't give up. Also organization skills are very good now. An example is when he planned his trip to Costa Rica. He got his passport, all his papers, what he needed, attended all meetings and helped raise money for his trip. He did all this on his own, without help from me. He did extremely well and was extremely organized.

His concentration span has made the most noticeable progress. He has more focus and gets his work done. It is a good program for students like my son.

I see remarkable improvement.

Interaction, concentration and organizational skills seem to have had the most improvement.

STUDENT COMMENTS

High School Students

I have improved on my listening skills and my hearing what everyone has to say. This program should have a permanent place in the school system because it helps many students with their disabilities.

I feel that I am progressing in speech, vocabulary, mental focus and pretty much better changes in most aspects. I do think this program should have a permanent place in my school because it'll help other students significantly as I noticed in me, i.e., my concentration span improved along with my interaction with siblings, teachers and I am able to focus on the task at hand a lot more than being without the Arrowsmith Program. This program has bettered me.

The biggest improvement that I have seen has been in math. I went from getting 70's in Basic math to 90's in General math. I hope to move to Advanced math.

In math class, I can copy the board writing on my paper without looking at the paper.

I have made lots of progress. In science I am finishing all my work in that class.

I understand math more.

The Arrowsmith Program has helped me in subjects like math, spelling and even memorizing.

I have done better in math and spelling.

Your program is successful and has helped my attention and handwriting.

My Improvements

June 1999

Grade 9 Student in Arrowsmith Program at St. Patrick Catholic Secondary School

Motor work has helped me in reading, spelling and writing. In reading, I can now read more efficiently than before and I read faster. I could not spell very good but now I can spell much better than before (as you can see). In writing I have improved pretty well because I used to have to think for a while how to write what I wanted to, but now I can do it in a flash.

Before I came to Arrowsmith I couldn't remember what someone said to me. Now after this work I can memorize what someone says. This has helped a great deal in memorizing things said. I used to forget parts of movies when I first started this work. My memory wasn't all that good. I am now doing so well I can remember more things that are going on, not only in the movies, but everywhere. Before I could not remember appointments, sometimes even hockey games and now I can.

I could never get the main idea or the main point in the story or anything else. This work has helped me a bit where I can get part of the idea but not all of it. I still need to work on this area.

Supplementary motor has helped me a lot in math. Before I could not do a bit of math in my head at all and I had to use my fingers. Now I can do it in my head. If I had not come here I would be struggling with math like I used to.

I always thought I was stupid because I never got anything right. But now I have been passing all of my math which makes me more confident. I am very happy with myself. So I am thankful for this work helping me so much.

Elementary School Students

I am better at math. I usually understand it the first time, before I had to ask a few times to get it. It helped me pick up my speed in reading. I can pick out the main idea easier.

I can sound out and remember more in reading so it is becoming easier to read. Math is easier and I don't have to ask for help as many times. I am more organized.

I get better marks in the projects in my classes. My marks are considerably higher. I occasionally have math problems but not as bad as I used to be.

In math I used to always use my fingers but now I only use my fingers sometimes. In reading I used to skip words and now I don't. It is easier to remember things now.

I understand easier. My handwriting has gotten better. I am taking instructions better.

Spelling and math are easier. I did not know my times tables and now I know some. I can spell a lot better. It is easier to tell time. My reading and writing have improved and I like to write stories.

In math I am able to figure out things easier and I answer a lot quicker. I read quicker and understand easier. I am remembering easier.

It has helped with my handwriting. It is readable. I can read my work now.

**QUESTIONNAIRE RESULTS ST. PATRICK CATHOLIC SECONDARY SCHOOL
JUNE 1998**

Seventeen grade 9 students were enrolled in the Arrowsmith Program in November 1997 at St. Patrick Catholic Secondary School. In June 1998 the parents and students rated the following changes:

<u>IMPROVEMENT RATING</u>	Extremely Noticeable	Somewhat Noticeable to Very Noticeable	No Change Noticeable
<u>Concentration Span</u>			
Student Rating	54%	46%	
Parent Rating	57%	43%	
<u>Ability to Focus</u>			
Student Rating	54%	39%	7%
Parent Rating	57%	36%	7%
<u>Following Instructions</u>			
Student Rating	62%	38%	
Parent Rating	72%	21%	7%
<u>Listening Skills</u>			
Student Rating	39%	61%	
Parent Rating	57%	43%	
<u>Organizational Skills</u>			
Student Rating	61%	39%	
Parent Rating	57%	36%	7%
<u>Time Management</u>			
Student Rating	62%	38%	
Parent Rating	43%	50%	7%
<u>Ability to Express Self</u>			
<u>Orally</u>			
Student Rating	61%	31%	8%
Parent Rating	64%	29%	7%
<u>Growth of Self Esteem</u>			
Student Rating	54%	8%	38%
Parent Rating	86%	7%	7%

These results are similar to those presented on pages 4 to 6 of this report.

**ACADEMIC RESULTS ST. PATRICK CATHOLIC SECONDARY SCHOOL
JUNE 1998**

Seventeen grade 9 students were enrolled in the Arrowsmith Program in November 1997 at St. Patrick Catholic Secondary School. In June 1998 the following changes were recorded:

ACADEMIC CHANGES

Percent Change in Overall Average on Academic
Course Work on Report Card from Term 1 to Term 2: 11%

Academic Testing:

	Reading Comprehension	1.3 grades
	Reading Speed	1.5 grades
	Word Recognition	2.2 grades
	Vocabulary	16 %ile
	Visual Memory	15 %ile
	Arithmetic	.7 grade
Differential Aptitude Test	Verbal Reasoning	8 %ile
	Clerical Speed & Accuracy	21 %ile
Test of Written Language	Written Language Quotient	11 points

**BENEFIT OF THE ARROWSMITH PROGRAM ONE YEAR AFTER COMPLETION
ST. PATRICK CATHOLIC SECONDARY SCHOOL AND ST. THERESA SHRINE
ELEMENTARY SCHOOL JUNE 2000**

**Benefit of Arrowsmith program as Rated by Parents, Teachers and Students One Year after
the student's completion of the Arrowsmith Program in the TCDSB:**

- ❑ Ability to focus and concentrate
- ❑ Understanding /clarity of thinking
- ❑ Reading skills and comprehension
- ❑ Understanding math
- ❑ Penmanship
- ❑ Writing makes more sense
- ❑ Speaks more clearly
- ❑ Memory
- ❑ Organizing activities
- ❑ Better use of time and time management
- ❑ Homework completion / work habits
- ❑ Task completion
- ❑ Doing better academically
- ❑ Growth of self-esteem, patience, maturity, confidence, independence, positive attitude
- ❑ Taking responsibility
- ❑ Takes risks and deals with frustration better
- ❑ Lower anxiety

ARROWSMITH PROGRAM CHARACTERISTICS

The Arrowsmith Program is a series of specific cognitive programs that have been developed from research in the fields of psychology and neuroscience for students identified as learning disabled. Each cognitive program has a hierarchy of levels from simple to complex and is designed to address a specific area of cognitive functioning. A list of some of these specific areas appears in the chart which follows this description. Each student is on an individualized program depending on the learning profile specific to that student which has been identified through an assessment process. Each cognitive program is comprised of a series of intensive and graduated tasks designed to strengthen the specific learning capacity that has been identified as below average. Performance evaluation criteria are built into each of the cognitive programs based on the principles of accuracy, consistency, and automaticity of performance. In order to master each level of a program, these criteria must be met prior to a student advancing to a more difficult level. Every student is re-assessed at the end of each year in order to evaluate his/her progress. The program is then modified for the following year based on the student's revised learning profile. Candidates for the Arrowsmith Program are students who have been identified or are in the process of being identified as learning disabled within the TCDSB.

The goal of the Arrowsmith Program is to identify, intervene, and strengthen several of the cognitive capacities underlying learning disabilities that affect learning and the acquisition of academic skills and curriculum and to help students capitalize on their increased learning capacities and eventually reintegrate them into the full curriculum, enabling them to function with a minimum of special education assistance, program accommodations or modifications and, in most cases, without the need for any further special education intervention or program modification.

The cognitive programs are designed to target the specific areas through different modalities:

- *Pencil and paper:* Students work on specific programs to improve the cognitive capacities required for motor skills related to the mechanical aspect of writing, skills required for written communication, organization, and planning, and thinking and problem solving and skills required for non-verbal communication.
- *Auditory:* Students work on specific auditory programs to help improve short and long term auditory memory, oral and written output, phonemic awareness, vocabulary development and increase the ability to hold and process information (working memory).
- *Computer based:* Students work on computer programs designed to strengthen the ability to reason, use logic, and comprehend, as well as programs for strengthening numeracy skills, reading and visual memory for symbol patterns necessary for reading and spelling.

Organizational Structure & Staffing Model

Students in the TCDSB Arrowsmith Program spend a maximum of half of their school day in a classroom designated as the Arrowsmith Program classroom with a TCDSB teacher who has been trained in the program. Within this classroom these students are each working on an individualized Arrowsmith program of cognitive tasks. In order to maximize the benefit from the cognitive programs, students need to spend a minimum of three to four hours per week on each of the activities specific to each cognitive program within their individualized program. Students spend the remainder of the school day in an age appropriate grade for instruction in other school subjects. The Arrowsmith Program classroom has a 1:10 teacher/pupil ratio. As students progress through the Arrowsmith Program, they require less time in the Arrowsmith classroom and are integrated for more of the day in the academic classroom.

Teachers are trained in the Arrowsmith Program methodology in an intensive 3 week summer training course. Continuing support is provided by an Arrowsmith Program Coordinator.

The support provided by Arrowsmith Program and the program Coordinator includes:

- a.) creating the student's individual learning profile;
- b.) designing the student's individual program;
- c.) overseeing the specific program of each student;
- d.) reviewing and providing feedback on each student's progress in each program, which is entered in an online database each month by the teacher administering the program;
- e.) providing feedback, direction and supervision of the students' programs to the classroom teacher; and
- f.) ongoing professional development and training.

LEARNING DYSFUNCTIONS AND LEARNING OUTCOMES

Learning Dysfunction	Description	Common Features	Learning Outcomes
Motor Symbol Sequencing	Difficulty learning and producing a written sequence of symbols.	Messy handwriting, miscopying, irregular spelling, speech rambling, careless written errors in mathematics, poor written performance.	Improve handwriting; reduce careless errors in written work; develop fine motor skills, sequential motor memory and motor planning in writing, capacity for hand-eye coordination.
Symbol Relations	Difficulty understanding the relationships among two or more ideas or concepts.	Reversals of b-d, p-q, difficulty reading a clock, needing to reread material to comprehend it, problem understanding cause and effect, trouble with mathematical reasoning.	Develop ability to read a clock; improve capacity necessary for understanding relationships between concepts necessary for logical and mathematical reasoning and reading comprehension affecting all aspects of curriculum and life.
Memory for Instructions	Difficulty remembering chunks of information.	Trouble remembering oral instructions, difficulty following lectures or extended conversations, problem acquiring general information through listening.	Develop auditory memory and the capacity to remember and follow oral instructions and retain information for learning; improve the capacity to remember chunks of information in the correct order.
Predicative Speech	Difficulty seeing how words and numbers interconnect sequentially into fluent sentences and procedures.	Problem putting information into one's own words, speaking in incomplete sentences, difficulty using internal speech to work out consequences, trouble following long sentences, breakdown of steps in mathematical procedures.	Improve the capacity to remember a sentence of increasing difficulty and length; improve the ability to put information into own words; develop the capacity for the sense of how symbols (words and numbers) interconnect sequentially; improve the ability to follow procedures in Mathematics; develop the ability to write and speak in complete sentences.
Broca's Speech Pronunciation	Difficulty learning to pronounce syllables and then integrate them into the stable and consistent pronunciation of a word.	Mispronouncing words, avoiding using words because of uncertainty of pronunciation, difficulty thinking and talking at the same time, flat and monotone speech with lack of rhythm and intonation, limited ability to learn and use phonics.	Develop/improve the capacity for sound-symbol correspondence; develop the phonemic memory necessary for the phonetic aspect of reading; develop the ability to pronounce multi-syllabic words correctly; develop the ability to read with greater oral expression

Symbolic Thinking	Difficulty developing and maintaining plans and strategies through the use of language.	Problem being self-directed and self organized in learning, limited mental initiative, difficulty keeping attention focused on task to completion, trouble seeing the main point.	Develop/improve the ability to grasp the main point of written or orally presented material; develop the ability to state the main idea of a selection using one's own words; develop the ability to maintain plans and strategies for problem solving; develop the capacity to express ideas more clearly in writing; develop the capacity to self-direct, to develop initiative and to remain focused on tasks to completion.
Symbol Recognition	Difficulty in visually recognizing and remembering a word or symbol that has been seen before.	Poor word recognition, slow reading, difficulty with spelling, trouble remembering symbol patterns such as mathematical or chemical equations.	Develop/improve the capacity to visually recognize and remember words or symbols necessary for reading, spelling and mathematics.
Lexical Memory	Difficulty remembering several unrelated words.	Problems with associative memory, trouble learning how to read due to difficulty associating the word with its sound, trouble following auditory information.	Improve vocabulary development and auditory memory for words.
Artifactual Thinking	Difficulty registering and interpreting non verbal information.	Problems interpreting non-verbal information such as body language, facial expression and voice tone, difficulty registering one's own emotions, weak social skills.	Develop the capacity for non-verbal thinking and problem-solving; develop the ability to interpret body language, facial expression and voice tone and to respond appropriately in interpersonal interactions; develop ability to interpret and modulate his/her own emotions.
Supplementary Motor	Difficulty carrying out internal sequential mental operations, such as mental mathematics.	Finger counting, trouble retaining numbers in one's head, difficulty making change, problem learning math facts, poor sense of time management.	Develop the capacity for number sense; develop the capacity for carrying out internal sequential, mental computation of addition and subtraction; develop the ability to use time wisely through scheduling and organization; develop an understanding of quantification related to money, time, space.