Designing Data-Driven High School Schedules to Reduce Dropout Rates

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A moral imperative…

- Every year approximately 1.3 million students—7,000 every school day—do not graduate from high school as scheduled (Time Magazine).
- Nearly one-third of all public high school students—and nearly one half of all African-Americans, Hispanics and Native Americans—fail to graduate from public high school with their class (The Silent Epidemic).
- The high school diploma is the bare minimum credential necessary to have a fighting chance…in the workforce (Education Trust).
- There is evidence that a large percentage of dropouts academically could successfully complete their high school studies (The Silent Epidemic).

Time Teacher Student Curriculum

Time Comparison Chart

	6 Per.	7 Per.	8 Per.	6 A/B	7 A/B	5 Block Tri.	8 A/B, 4X4, Hybrid
HR	13	14	11	13	15	15	13
Passing Time	35	40	45	20	25	30	25
Lunch	30	30	30	30	30	30	30
Class Length	57	48	43	119	3 X100 and 1X 50	69	88
Total	420	420	420	420	420	420	420
Course Time	10,260	8,640	7,740	10,710	9,000	8280	7920
Choices	6	7	8	6	7	7.5	8
# of Yearly Classes	180	180	180	90	90 or 180	120	90
% Core	5/6 (67%)	4/7 (57%)	4/8 (50%)	5/6 (67%)	4/7 (57%)	4/7.5 (53%)	4/8 (50%)

All computations based on a 7 hour student day.

Only one of these schedules does all of the following…

- Balances the workload for students.
- Balances the workload for teachers.
  - Must make it difficult for students to fail.
  - Must make it difficult to get a good grade without work and re-work.
  - Must provide focused feedback and support.
- Allows acceleration to meet the needs of students at both ends of the achievement continuum.
- Reduces “failing time,” which is critical for timely progress towards graduation in sequenced courses (math and English).

Planning Sheet for Basic 4 X 4 Semester Schedule

Alternate Semester Block Schedule (8 Courses)		
Period	Semester 1	Semester 2
1		
2		
3		
4		
5		
6		
7		
8		

Alternate Semester Block Schedule (8 Courses)		
Period	Semester 1	Semester 2
1		
2		
3		
4		
5		
6		
7		
8		

Alternate Semester Block Schedule (8 Courses)		
Period	Semester 1	Semester 2
1		
2		
3		
4		
5		
6		
7		
8		

Suggested High School Schedule for Cohort I (Plan A) Students Who Attend Schools Requiring Early Competency Testing in Multiple Disciplines in Grade 10

Modified 4/4 Semester Block Schedule for 9th Grade (8 courses)

Period	Semester 1	Semester 2
1	Reading	Power English
2	(May have to be an English elective)	(English Elective)
3	Power Algebra I	Algebra I
4	(SREB Competencies)	
5	Social Studies One	Science One
6		
7	*Day 1*-PE/Health	*Day 1*-PE/Health
8	*Day 2*-Technology	*Day 2*-Technology

Modified 4/4 Semester Block Schedule for 10th Grade (8 courses)

Period	Semester 1	Semester 2
1	English 9	English 10
2		
3	Continuation of Algebra I and/or begin Geometry	
4	and continue through Semester 2	
5	Science Two	*Day 1*—Trailer Science
6		*Day 2*--Trailer Math
7	Social Studies Two	1 2 3 4 5 6 7 8 9
8		10 days each to explore 9 career choices.*

**Note: If these exploratory career choices are not wanted or cannot be scheduled, students could participate in another elective (either core or encore); some Cohort I students may need to earn recovery credit during this block.*

Modified 4/4 Semester Block Schedule for 11th and 12th Grades (8 courses each school year)

Option 1: For Grades 11 and 12, Cohort I (Plan A) students could attend a Career/Technical Center (C & T) full-time.

Option 2: Students could attend a C & T Center all day for a full semester each year of Grades 11 and 12.

Option 3: For Grades 11 and 12, students could attend a C & T Center for three blocks at the beginning of the school day, and then return to their home school for one block (possibly last block of day) to participate in electives such as band, debate and newspaper, and be able to participate in after-school sports. This block also could be used to help students who need tutorials in core classes and/or who need to work on recovery credits in selected subjects.

Suggested High School Schedule for Cohort I, Grade 10 Students Who Attend Schools Requiring Early Competency Testing in Multiple Disciplines in Grade 10

Modified 4/4 Semester Block Schedule for 10th Grade (8 Courses):

<table>
<tr><th>Period</th><th>Semester 1</th><th>Semester 2</th></tr>
<tr><td>1</td><td rowspan="2">Science One</td><td rowspan="2">Science Two
Note: For students who fail Science One, they could repeat that course during Semester Two. If intensive recovery credit is available, students who failed Science One could begin Science Two during this semester.</td></tr>
<tr><td>2</td></tr>
<tr><td>3</td><td colspan="2" rowspan="2">Continuation of Algebra I, if needed, and complete Geometry during Semesters 1 and 2, which provide time for two years of work in a traditional high school schedule.</td></tr>
<tr><td>4</td></tr>
<tr><td colspan="3">Lunch</td></tr>
<tr><td>5*</td><td rowspan="2">English 10</td><td rowspan="2">Day 1—English 10 Trailer Course

Day Two—Social Studies Two Trailer Course</td></tr>
<tr><td>6*</td></tr>
<tr><td>7</td><td colspan="2" rowspan="2">During Block 4, students may complete one or two electives, repeat any failed core classes, enroll in one or two Career/Technical classes or participate in test prep classes. We suggest that schools offer trailer classes if selected students receive a “C” or “D” in selected core classes having content over which they will be tested. Block 4 could be scheduled either in a semester/semester or alternate day (Day 1/Day2) format.</td></tr>
<tr><td>8</td></tr>
</table>

Note 1: This schedule was designed primarily for students who were enrolled in 30-Day intensive classes during Semester 1 of Grade 9.

Note 2: For students having major attendance problems and needing intensive support and mentoring at school, intensive scheduling may be best for them during Semester 2 of Grade 9 and Semester 1 of Grade 10.

* An alternative scheduling format for Block 3.

45-Day Intensive Schedule Worksheet

Version I

Period	Semester 1		Semester 2	
	45 Days	45 Days	45 Days	45 Days
1	Math Funds.	Power Algebra	Power English	English 9
2				
3				
4				
Lunch	30 minutes			
5	Reading		Algebra I	
6				
7	PE/H		Technology	
8				

Version II

Period	Semester 1		Semester 2	
	45 Days	45 Days	45 Days	45 Days
1				
2				
3				
4				
Lunch	30 minutes			
5				
6				
7				
8				

Version III

Period	Semester 1		Semester 2
1			
2			
3			
4			
Lunch	30 minutes		
5			
6			
7			
8			

45-Day Intensive Schedule Worksheet

Version I

Period	Semester 1		Semester 2	
	45 Days	45 Days	45 Days	45 Days
1	Reading	Power English	Power Algebra	Algebra I
2				
3				
4				
Lunch	30 minutes			
5	Math Funds.		English 9	
6				
7	PE/H		Technology	
8				

Version II

Period	Semester 1		Semester 2	
	45 Days	45 Days	45 Days	45 Days
1				
2				
3				
4				
Lunch	30 minutes			
5				
6				
7				
8				

Version III

Period	Semester 1		Semester 2	
1				
2				
3				
4				
Lunch	30 minutes			
5				
6				
7				
8				

Suggested High School Schedules for Under-Credited and/or Over-Age Students at End of Grade 9 Who Need Both Mentoring and Acceleration to Increase Graduation Odds

Grade 10

Period	Semester 1		Semester 2	
	45 Days	45 Days	45 Days	45 Days
1	Power English*	English 9/10	Power Algebra*	Algebra I
2				
3				
4				
Lunch	30 minutes			
5	Social Studies ONE or TWO		Science ONE or TWO	
6				
7	Elective		Elective/Tutorials	
8	Tutorials		Career Technical	

Grade 11

Period	Semester 1	Semester 2
1	English 10 or 11	English 10 or 11 (Recovery)
2		
3	Math TWO	Math THREE or Recovery Credit
4		
Lunch	30 minutes	
5	Science TWO or THREE	Career/Technical
6		
7	Social Studies TWO or THREE	Career/Technical
8		

Grade 12

Period	Semester 1	Semester 2
1	English 12	Career/Technical
2		
3	Social Studies THREE or FOUR	Career/Technical
4		
Lunch	30 minutes	
5	Math THREE or FOUR	Career/Technical
6		
7	Science THREE or FOUR	Career/Technical
8		

* See SREB materials from Cohort Materials.

Suggested High School 30-Day Schedule for Students Needing Intensive Acceleration and Support

Student Schedules

4/4 Semester Block Schedule Modified to Provide Intensive Acceleration and Support

	Semester 1			Semester 2
	30 Days	30 Days	30 Days	Potential Re-entry to Modified 4/4 Semester Schedule
Block I	**Grp. 1 Power Algebra**	**Grp. 1 Reading**	**Grp. 1 Power English**	English 9
Block II	**Grp. 2 Reading**	**Grp. 2 Power Algebra**	**Grp. 2 Power English**	Algebra I
Block III	**Grp. 3 Reading**	**Grp. 3 Power English**	**Grp. 3 Power Algebra**	Social Studies
Block IV	Elective			Elective

Alternate Possibility

	Semester 1			Semester 2		
	30 Days	30 Days	30 Days	30 Days	30 Days	30 Days
Block I						
Block II						
Block III						
Block IV						

Suggested High School 30-Day Schedule for Students Needing Intensive Acceleration and Support

Teacher Schedules

4/4 Semester Block Schedule Modified to Provide Intensive Acceleration and Support

	Semester 1			Semester 2
	30 Days	30 Days	30 Days	Potential Re-entry to Modified 4/4 Semester Schedule
Block I	**Grp. 1 Power Algebra**	**Grp. 2 Power Algebra**	**Grp. 3 Power Algebra**	Math Class
Block II	**Grp. 2 Reading**	**Grp.3 Power English**	**Grp. 1 Power English**	English Class
Block III	**Grp. 3 Reading**	**Grp. 1 Reading**	**Grp. 2 Power English**	English Class
Block IV	Elective			Elective

Alternate Possibility

	Semester 1			Semester 2		
	30 Days	30 Days	30 Days	30 Days	30 Days	30 Days
Block I				Teachers of Groups 1-3 1st semester could teach recovery credit courses 2nd semester.		
Block II						
Block III						
Block IV						

Sample Modified Four-Block Middle School Schedule for Full-Year Retained Grade 8 Students

Plan C

Period	Fall Semester	Spring Semester
1 2	Language Arts 8 *(Repeat Course)	*English 9 (New Course)
3 4	Math 8 or Pre-Algebra *(Repeat Course)	*Algebra I, Part I or Other Math (New Course)
Lunch	30 minutes	30 minutes
5 6	*Science (Repeat Course) Social Studies (Repeat Course)	World Geography or Spanish I (New Course)
7 8	Exploratory or Elective PE/Health	Exploratory or Elective PE/Health

Option 1: These students could follow this proposed Fall Semester schedule in the middle school where they were retained and then move to their assigned high school during the Spring Semester, assuming that the high school also is following a 4/4 semester schedule.

Option 2: The students could be placed in their high school and follow this proposed schedule during the Fall Semester; if successful, they would have "some chance" to earn a sufficient number of high school credits to graduate with their class/age group.

Option 3: The students could remain in their middle school for this entire school year but be allowed to complete at least three or four high school credits, assuming their Fall Semester of "repeats" was successful;

* Could be SREB Power English, Power Algebra and Power Science.

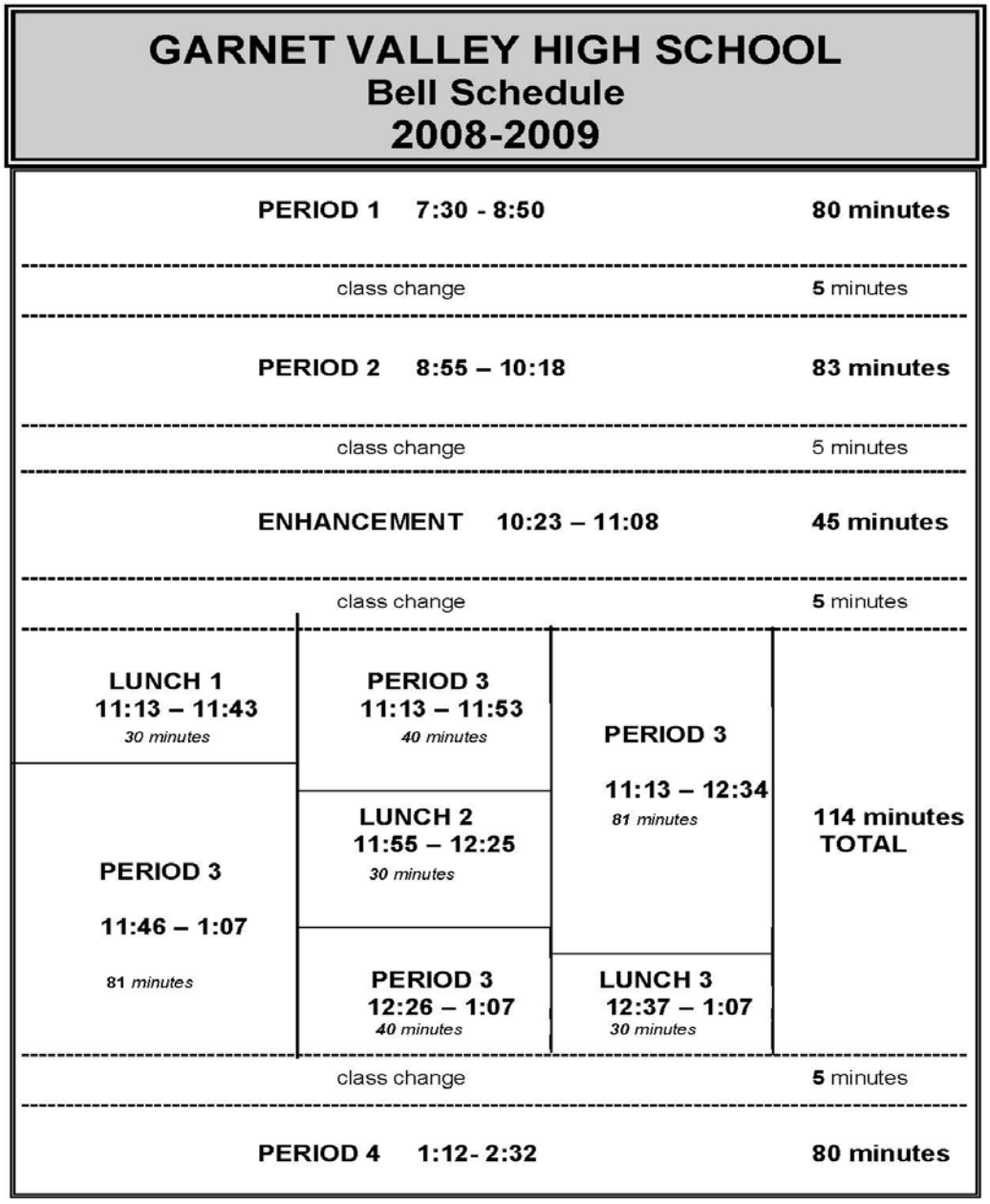
Algebra/Math Team Schedule

<table>
<tr><th></th><th>Q1</th><th>Q2</th><th>Q3</th><th>Q4</th><th>Q5</th><th>Q6</th><th>Q7</th><th>Q8</th></tr>
<tr><td>Teacher A</td><td>Part 1</td><td>Part 2</td><td>Part 3</td><td>Part 4</td><td colspan="4" rowspan="2">Students Take New Courses and/or Teachers Instruct New Sections of Math</td></tr>
<tr><td>Teacher B</td><td>Part 1</td><td>Part 2</td><td>Part 3</td><td>Part 4</td></tr>
<tr><td>Teacher C</td><td>Part 1</td><td>Part 2</td><td>Part 3</td><td>Part 3</td><td>Part 4</td><td>C. Lab</td><td colspan="2" rowspan="2">½ Credit Electives Available—Time also could be spent reviewing for major required state assessments.</td></tr>
<tr><td>Teacher D</td><td>Part 1</td><td>Part 2</td><td>Part 2</td><td>Part 3</td><td>Part 4</td><td>Part 4</td></tr>
<tr><td>Teacher E</td><td>Part 1</td><td>Part 1</td><td>Part 2</td><td>Part 3</td><td>Part 3</td><td>Part 3</td><td>Part 4</td><td>C. Lab</td></tr>
<tr><td>Teacher F</td><td>Part 1</td><td>Part 1</td><td>Part 2</td><td>Part 2</td><td>Part 3</td><td>Part 3</td><td>Part 4</td><td>Part 4</td></tr>
</table>

Note: Q1 stands for a quarter of the time it normally would take to complete a course within a double-block format, typically 4 ½ to 5 weeks. Also, Algebra I is divided into four distinct and assessable curriculum divisions. This chart is one example; the actual number of sections for each part of the course will vary based upon the assessment results. Based upon the results of previous years, school administrators can predict the need for half-credit electives and the staffing needed for the math block.

See: Rettig, M. D. & Canady, R. L. (1998). High failure rates in required mathematics courses: Can a modified block schedule be part of the cure? NASSP Bulletin,82(596), 56-65.

The Intervention/Enrichment Period



GARNET VALLEY HIGH SCHOOL
Bell Schedule
2008-2009

PERIOD 1	**7:30 - 8:50**	**80 minutes**
class change		**5** minutes
PERIOD 2	**8:55 – 10:18**	**83 minutes**
class change		5 minutes
ENHANCEMENT	**10:23 – 11:08**	**45 minutes**
class change		**5** minutes
LUNCH 1 **11:13 – 11:43** *30 minutes*	**PERIOD 3** **11:13 – 11:53** *40 minutes*	**PERIOD 3** **11:13 – 12:34** *81 minutes*
PERIOD 3 **11:46 – 1:07** **81** *minutes*	**LUNCH 2** **11:55 – 12:25** *30 minutes*	**114 minutes TOTAL**
	PERIOD 3 **12:26 – 1:07** *40 minutes*	**LUNCH 3** **12:37 – 1:07** *30 minutes*
class change		**5** minutes
PERIOD 4	**1:12- 2:32**	**80 minutes**

Key Factors: I/E

- Scheduling the Intervention/Enrichment period is easy compared to organizing and preparing for instruction within it.
- All students and staff must be productively engaged during the period.
- A decision must be made as to what role students' choice plays in the I/E period.
- A computer management program with capability of tracking students' I/E choice/assignment and attendance is necessary.
- Clear, consistent, and involved leadership is required to ensure that assessment, data analysis, tiering, planning intervention and enrichment instruction, and progress monitoring all are carried through.
- Time must be allocated for planning for groupings and instructional activities.
- It may be wise to select specific programs for enrichment and/or intervention activities rather than having teachers design their own.
- An Response to Intervention (RTI) type tier structure based upon this assessment is necessary to allocate students to enrichment, moderate intervention and intensive intervention groups.
- A decision must be made as to whether or not special services (i.e. special education or ESOL) will be "the" intervention for some qualifying students during the I/E time or will they be served at a different time by those professionals.

An economic imperative…

- Dropouts from the class of 2004, alone will cost the nation more than $325 billion in lost wages, taxes, and productivity over their lifetimes (Rouse, 2005).
- If all students in the class of 2006 had graduated on time, the nation's economy would have gained an additional $309 billion in income over their lifetimes …and save $17.1 billion in lifetime health costs…(Education Week).

(Much more and full references available at www.schoolschedulingassociates.com)

DATA NEEDED TO GUIDE SCHOOL PERSONNEL IN BUILDING SCHEDULES AROUND STUDENT NEEDS – ESPECIALLY STUDENTS WHO MAY BE POTENTIAL DROPOUTS

- For the past two years, how many students (not counting those who legitimately transferred to other schools, programs, etc.) left school before the end of Grade 9? Grade 10?
- How many students remained in school until the end of Grade 9 but had obtained fewer than five Carnegie credits that count toward graduation requirements in your state? How many students remaining at the end of Grade 10 had fewer than ten credits that count toward graduation? The number of students at each grade level who left represents what percent of the total number in each grade?
- How many students remained in school until the end of Grade 9 but did not obtain a Carnegie unit of credit in English 9 and Algebra I?
- How many students in the total school who left school before graduating tried to return? Were they permitted/encouraged to return? If so, how were they accommodated?
- In reviewing data for the past two years in your school, how many students were failing English 9 and Algebra I by November or even earlier? If passing, how many were likely to receive a grade for the course of less than C?
- At the end of Grade 9, how many students in the school do not have sufficient credits to have any chance of graduating on time with their class? Grade 10?
- Are there any assessments available in Grades 7 and 8 that give reasonable predictions on the number of students who have little or no chance of succeeding in Algebra I IF the teacher begins early in the course primarily with Algebra I content?
- How many students entering Grade 9 are at least one year over age? Two years over age? More than two years over age? Give the same information for students in Grade 10. If possible, disaggregate the numbers by gender, race and socio-economic factors
- How many students are failing courses in your school based primarily on policies related to attendance/excused or unexcused absences – policies either mandated by the state, school district, individual school or practices by individual teachers? How early are students told they must fail or that they can not pass a particular course? When it is evident that students must fail, what options are open to the students other than staying with the course and spending even more time failing?
- How many students entering Grade 9 are at least one year over age? Two years over age? More than two years over age? Give the same information for students in Grade 10. If possible, disaggregate the numbers by gender, race and socio-economic factors.

- For a more detailed discussion visit www.schoolschedulingassociates.com.

SCHOOL SCHEDULING AND TEACHING PRACTICES RELATED TO IMPROVING STUDENT ACHIEVEMENT

- **BALANCE WORK LOAD of STUDENTS;** pay special attention to homework and independent work expectations. **BALANCE WORK LOAD of TEACHERS.**
- **BUILD SCHEDULES BASED ON STUDENT NEEDS/DATA.**
- **PROVIDE SCHEDULES that REDUCE FAILING TIME for Students and that ALLOW SHORT-TERM ACADEMIC GOALS to be MET.**
- **OFFER ELECTIVE CLASSES that build FOUNDATION and COMPETENCIES for CORE Classes.** Consider SREB materials (www.sreb.org).
- **OFFER FLEXIBLE SCHEDULING of CORE CLASSES for struggling students;** schedule essential core classes that begin at various times during the school day/year. For some working students a power English class might begin at 10:00 a.m., and run for three blocks of time for 30 days. This schedule is equal to a year's work and can provide a full credit. Such schedules reduce the failing time that many students experience in traditional schedules.
- **CREATE SMALL GROUP, CARED-ABOUT LEARNING ENVIRONMENTS.** This practice is essential for the most alienated students in our schools!
- **PROVIDE EXTENDED LEARNING TIME** for high-failure courses and for struggling students. Institutionalize this practice; do not just assume individual teachers will or can do it!
- **PROVIDE SUPPORT for Students.** Provide time in the Master Schedule for **TUTORIALS.** For some students this assistance is more productive if provided by the teacher(s) responsible for the initial instruction.
- **ASSIGN STRUGGLING STUDENTS to TEACHERS who MAKE IT DIFFICULT for students to fail but also who INSIST THAT STUDENTS DO HIGH QUALITY WORK by providing FOCUSED FEEDBACK and having students RE-DO WORK UNTIL THE WORK IS ACCEPTABLE.** Provide students with daily opportunities to read, write, discuss, debate and re-write! Institutionalize a ZAP (zeroes aren't possible) policy in the school. Address major attendance policies with modified make-up requirements; offer support/tutorials to assist students in completing "missed" work.
- **INCREASE THE AMOUNT OF TIME STUDENTS ARE ACTIVELY ENGAGED IN THEIR LEARNING.** Use technology extensively. Let students work in cooperative groups to solve problems and to complete difficult work assignments. Use real-work examples/problems. Try to give assignments that have meaning to the students and the world in which they live.
- **ALTER POLICIES and GRADING PRACTICES that focus on "SORTING AND SELECTING" rather than TEACHING and LEARNING!**

References

- Ball, W. H. and Brewer, P. F. (2000). Socratic seminars in the block. Larchmont, NY. Eye On Education.
- Blaz, D. (1998). Teaching foreign languages in the block. Larchmont, NY: Eye on Education.
- Canady, R. L. & Rettig, M. D. (Eds.) (1996). Teaching in the block: Strategies for engaging active learners. Larchmont, NY: Eye On Education.
- Canady, R. L. & Rettig, M. D. (1995). Block scheduling: A catalyst for change in high school. Larchmont, NY: Eye on Education.
- Conti-D'Antonio, M., Bertrando, R. and Eisenberger, J. (1998). Supporting students with learning needs in the block. Larchmont, NY: Eye on Education.
- Gilkey, S. N. and Hunt, C. H. (1998). Teaching mathematics in the block. Larchmont, NY: Eye on Education.
- Pettus, A. and Blosser, M. (2001). Teaching science in the block. Larchmont, NY. Eye On Education.
- Canady, R. L. & Rettig, M. D. (2008). Elementary school scheduling: Enhancing instruction to increase student achievement. Larchmont, NY: Eye on Education.
- Rettig, M. D., McCullough, L. L., Santos, K. E., Watson, C. R. (2004). From Rigorous Standards to Student Achievement: A Practical Process. Larchmont, NY: Eye On Education.
- Rettig, M. D. & Canady, R. L. (2000). Scheduling strategies for middle schools. Larchmont, NY: Eye On Education.
- Rettig, M. D. & Canady, R. L. (1998). High failure rates in required mathematics courses: Can a modified block schedule be part of the cure? NASSP Bulletin,82(596), 56-65.
- Rettig, M. D., McCullough, L. L., Santos, K.E., and Watson, C.R. (2004). From rigorous standards to student achievement: A practical process. Larchmont, NY: Eye on Education.
- Strzepek, J. E., Newton, J., and Walker, L. D. (2000). Teaching English in the block. Larchmont, NY: Eye On Education.