

### *Reform Cohorts*

Students in the Reform cohorts used a semestered block schedule and the IMP curriculum. The First and Second Reform cohorts were, respectively, the second and third group of students at Suburban High School to use the new schedule and curriculum.

*The Semestered Block Schedule*

The school piloted a semestered block schedule with ninth graders during the 1996-97 school year—the year before the students in the First Reform cohort entered high school. As noted above, during the 1997-98 school year when students in the First Reform cohort were in ninth grade, Suburban High School implemented a block scheduling school-wide. That year, students took 4 courses at a time, each course meeting 80 minutes per day for one 80-day semester. A 20-day spring session was reserved for special in-depth projects.

During the 1998-99 school year, when students in the First Reform cohort were in tenth grade and students in the Second Reform cohort were in ninth grade, the schedule was modified to consist of two 90-day semesters, as the 20-day spring session was eliminated. The schedule has remained unchanged since that time.

### *The IMP Curriculum*

At the same time Suburban High School began piloting a semestered block schedule, the school also began piloting the IMP curriculum. Each of IMP's four year-long textbooks contains five modules. Individual modules are usually designed around a single over-arching problem whose solution requires a number of key mathematics concepts. Students spend several weeks working on sub-problems and related problems, developing the mathematics skills and knowledge needed to solve the module's central problem.

The four IMP textbooks cover most of the material contained in the traditional 3-year sequence of algebra 1, geometry, and algebra 2, plus some additional material generally contained in a trigonometry/pre-calculus course. In addition, units dealing with matrix algebra and/or units dealing with probability and statistics are included in each of the four textbooks.

All regular education students in the Reform cohorts used a sequence of four IMP courses to replace the traditional three-course core sequence. The IMP courses replaced Algebra 1, Geometry, and Algebra 2, at either the Honors, College Preparatory, or Academic Assisted level.

Suburban High School continues to distinguish among “levels” of courses. Different levels used the same IMP curriculum, but moved through it at differing speeds. The Honors level courses complete an entire IMP textbook (five modules) in each course; the College-Preparatory level courses finish four IMP modules per course, and the Academic-Assisted level courses finish three or four IMP modules per course. Table 1 displays the sequence each ability level followed as it completed the IMP modules as of 2000-2001. As Table 1 shows, Suburban High School adapted the IMP curriculum to the fewer hours available for instruction per course under a block schedule by completing less than one year’s worth of material per course for all except Honors-level students. Appendix E supplements Table 1 by providing a detailed description of the key concepts and skills within each IMP module as described on the Suburban High School 2000-2001 course syllabi.

It should be noted that, while the information in Table 1 is representative of the coursework students completed as they went through the Integrated Math sequence, the

syllabi did change somewhat from year to year. In particular, in the earlier years of implementation teachers were less familiar with the IMP content, and course syllabi contained completed fewer modules per course than is reflected in the 2000-2001 data displayed in Table 1.

Also, teachers at Suburban High School have not always been able to complete the entire course syllabus. Partly because their students have the opportunity to study statistics either in an Advanced Placement or standard format after completing the IMP sequence, when pressed for time teachers have usually dropped one or more of the probability and statistics modules from their syllabus. According to teachers at the school, *The Game of Pig* and *The Pit and the Pendulum* have nearly always been taught as described in course syllabi, but *Is There Really a Difference?* and *Pennant Fever* have only sometimes been taught. *The Pollster's Dilemma* has generally not been taught, but it is the intent of the teachers that it will be in future years.

*Table 1. Sequence of IMP modules completed by each ability group at Suburban High School*

	<u>Course in Which Module Was Completed</u>		
	<u>Honors</u>	<u>College Prep</u>	<u>Academic Assisted</u>
<b>IMP Textbook Year 1</b>			
Patterns	Integrated Math 1	Integrated Math 1	Integrated Math 1
The Game of Pig	Integrated Math 1	Integrated Math 1	Integrated Math 1
The Overland Trail	Integrated Math 1	Integrated Math 1	Integrated Math 1
The Pit and the Pendulum	Integrated Math 1	Integrated Math 2	Integrated Math 2
Shadows	Integrated Math 1	Integrated Math 1	Integrated Math 2
<b>IMP Textbook Year 2</b>			
Solve It!	Integrated Math 2	Integrated Math 2	Integrated Math 2 and 3
Is There Really a Difference?	Integrated Math 2	Integrated Math 3	-
Do Bees Build it Best?	Integrated Math 2	Integrated Math 2	Integrated Math 3

Cookies	Integrated Math 2	Integrated Math 3	Integrated Math 3
All About Alice	Integrated Math 2	Integrated Math 2	Integrated Math 4

**IMP Textbook Year 3**

Fireworks	Integrated Math 3	Integrated Math 3	Integrated Math 4
Orchard Hideout	Integrated Math 3	Integrated Math 3	Integrated Math 4
Meadows or Malls?	Integrated Math 3	-	Integrated Math 4

Small World, Isn't It?	Integrated Math 3	Integrated Math 4	-
------------------------	-------------------	-------------------	---

Pennant Fever	Integrated Math 3	-	-
---------------	-------------------	---	---

**IMP Textbook Year 4**

High Dive	Integrated Math 4	Integrated Math 4	-
As the Cube Turns	Integrated Math 4	-	-
Know How	Integrated Math 4	Integrated Math 4	-
The World of Functions	Integrated Math 4	Integrated Math 4	-
The Pollster's Dilemma	Integrated Math 4	-	-

Because students in different ability groups completed differing numbers of modules per course, there were some IMP modules that students in lower ability groups do not cover until twelfth grade, and others they did not cover at all. In general, by the end of Integrated Math 3, College Preparatory students completed most of the material usually contained in Algebra 1, Geometry, and Algebra 2. By the end of Integrated Math 4, College Preparatory students completed much of the material generally contained in a Trigonometry/Pre-Calculus course as well. The four modules deleted from the College Preparatory curriculum dealt primarily with probability, statistics, and matrix algebra.

Two of the modules that weren't addressed until Integrated Math 4 in Academic Assisted classes deal with concepts contained in the algebra achievement test utilized by this study. *All About Alice* deals extensively with exponential functions, and *Fireworks* presents extensive opportunities to work with quadratic equations. A third module, *Orchard Hideout*, covers key geometry concepts, and the fourth, *Meadows or Malls?* covers matrix algebra concepts that were left out of the College Preparatory classes. The modules that Academic Assisted classes never cover include three of the four dealing with probability and statistics, one dealing with matrix algebra, and nearly all of the Trigonometry/Pre-Calculus content. Some Academic Assisted students who wished to study the Trigonometry/Pre-Calculus content did so by enrolling in Integrated Math 4 College Preparatory after completing Integrated Math 4 Academic Assisted.

It should be noted while the Algebra topics tested on the Algebra Achievement test used by this study are addressed by IMP before the end of the Year 3 textbook, there is some review and extension of Algebra concepts in IMP Year 4. This is particularly

true of quadratic equations, which are among the topics addressed in the modules *Know How* and *High Dive*. Honors students completed both modules as part of Integrated Math 4, while College Preparatory students completed *Know How* in Integrated Math 4, but did not complete *High Dive*. For this reason, students in the Reform cohorts who took Integrated Math 4 in their senior year had not completed all of their Algebra study at the time the Algebra Achievement test was administered.

After completing the four Integrated Math courses, students could take Contemporary Mathematics, Functional Analysis, Discrete Analysis, Statistics, Calculus A/B and Calculus B/C. The Algebra 3/Trigonometry course, which had contained a mixture of Algebra review and more advanced topics that were now studied in Integrated Mathematics 4 College Preparatory, was discontinued.