



IMPressions

SPRING 1998

A NEWSLETTER ABOUT THE INTERACTIVE MATHEMATICS PROGRAM™

Why Choose *IMP*? A Counselor Provides Some Answers

Paul Sacco is a counselor at San Lorenzo Valley High School in Felton, CA. San Lorenzo Valley is one school which elected to replace their traditional mathematics sequence with an IMP-only curriculum, and Sacco is an IMP-enthusiast who offers helpful advice for schools implementing IMP.

“**D**ump Algebra I, Geometry, Algebra II, Math Analysis! Let’s go with *IMP*™.” That was my response when the math department at San Lorenzo Valley High School asked me for input as a counselor.

As a former high school math teacher and a current counselor for nine years, I knew that the politics of installing *IMP* was a bold move that would lead to many battles. And yet we made it happen. I feel that our experience can help others

deal with the issues that arise in a high school setting when implementing and maintaining *IMP*.

Four years ago, San Lorenzo Valley adopted *IMP Year 1*

for incoming freshman in place of traditional algebra. Subsequent years of the *IMP* curriculum were added yearly, and the traditional curriculum eliminated, until this year, when an *IMP*-only curriculum was achieved. I saw no reason to keep the traditional sequence in any form, even as an alternative. Some schools keep both programs to avoid battles over which is better. But I remembered some sage advice, “Draw the line where it should be drawn, because no matter where you draw it there will be a fight.” The surest way to fail is to try to please everybody.

In many schools today, both math programs are offered. Parents and students can choose one and then blame that math program for a student’s

failure. Schools that have both *IMP* and the traditional sequence constantly deal with this issue. At San Lorenzo Valley, we feel that *IMP* is the better program. We don’t even consider the traditional sequence as a possibility. If parents are adamant, their students can take the traditional sequence at a local community college.

My concern about the traditional sequence started long ago. When I told people I was an algebra teacher, I’d be pinned down by their horror stories of painful math classes and lives ruined; I’d hear vivid stories of I-was-good-at-everything-until-it-came-to-algebra. Yet

people accepted the traditional sequence as the valid system. If a student failed, parents said, “I guess my kid’s not good at math. He should work harder. She should get a tutor, go to summer school, drop out of the college prep track” and so on. Parents accepted this system even though they had their own horror stories about math and/or had forgotten every morsel from Algebra I except that Mr. Inkowitz smelled like duplicator fluid.

I also noticed some strange inconsistencies in student achievement. Bright, mathematically intuitive, capable students complained about spending six weeks manipulating polynomial functions. Why did we spend four to six weeks multiplying polynomials (FOIL) and factoring them? Worse, students who received high grades in Cartesian coordinates gave me a blank look when asked to graph the relationship between Fahrenheit and Celsius.

I realized that the traditional sequence was teaching

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Paul Sacco counsels IMP parent and teacher, Sandie Gilliam.

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P U B L I S H E D B Y

 **Key Curriculum Press**
Innovators in Mathematics Education

What's New With the IMP Directors?

The four directors are busy working on completing *Years 3 and 4* of the program, while continuing to oversee administration, build interest, and make improvements to *IMP™*.

Dan Fendel is currently working on the production of the *IMP Year 3* text and the development of the final versions of the *Year 4* units. He has made several presentations this year in California and Colorado on how *IMP* integrates geometry into a problem-based curriculum. Look for him at the April NCTM Annual Meeting in Washington, D.C.

Diane Resek is focusing on the *Year 4* curricula and administrative matters. She is also studying preservice teacher education programs throughout the U.S. and abroad, as part of a sabbatical year. In the fall, she visited the East Coast; in the spring she is visiting Hawaii and Australia; and in the summer she will spend time in Israel—gathering information in her travels to help create a truly effective program for

credentialing secondary teachers so they are prepared to teach *IMP* and other reform curricula.



(l to r) IMP Directors Alper, Fendel, Fraser, and Resek

While continuing to work with California *IMP*, Lynne Alper focuses on national issues with the Implementation Center for the *Interactive Mathematics Program*. Lynne is always interested in receiving your photographs of *IMP* students in action—especially *Year 4* right now. She presented at California mathematics conferences last fall and will be at the NCSM and NCTM Annual Meetings in April.

In addition to working with the Implementation Center for the *Interactive Mathematics Program*, Sherry Fraser teaches the final field-test version of *IMP Year 4* at Tamalpais High School in Mill Valley, California. She also works with the designer at Key Curriculum Press on the *IMP* texts. Sherry presented at mathematics conferences last fall and will also be presenting at the NCSM and NCTM Annual Meetings in April.

Study Reveals Notable Achievement Among IMP Students

The third and latest report on the findings of a major external evaluation of the *Interactive Mathematics Program™* shows *IMP* students achieving on many fronts. The report, "Evaluation Update No. 3, Fall, 1997," details the outcome of a series of three studies designed to examine content knowledge and skills in the areas of statistics, problem solving, and quantitative reasoning—three topics *IMP* students study which are not typically included in a traditional program of secondary mathematics or covered on standardized tests.

The studies are one component of a five-year evaluation funded by the National Science Foundation and led by Dr. Norman Webb of the Wisconsin Center for Education Research (WCER) at the University of Wisconsin, Madison. The objectives of Dr. Webb's ongoing evaluation are fourfold:

- determine whether *IMP* students take more math than students in traditional mathematics;
- measure the performance of *IMP* and non-*IMP* students by conventional means (standardized tests);
- measure the performance of *IMP* and non-*IMP* students in those content areas included in the *IMP* curriculum, but not covered on standardized tests;
- gather data from teachers about what they need to make the change from a traditional curriculum to *IMP*, as well as information about the experience from those who have made the change.

"Evaluation Update 3" details the findings of Dr. Webb's third objective. Results were obtained in the study through assessment tools other than norm-referenced, standardized tests. This part of the evaluation was important because *IMP* students spend at least 25% of their time studying mathematics topics that aren't traditionally covered in secondary mathematics, such as statistics and probability. And, since the program aims to increase problem-solving skills and quantitative reasoning, those skills also require assessment. The results of the WCER study showed significantly higher achievement among *IMP* students. Students in the study were matched on the basis of grade 8 achievement test scores. Gender and ethnicity were also used in matching student groups, when it was possible to include these factors and also match scores.

In other WCER evaluations, students in both traditional mathematics and *IMP* classes were measured through standardized tests such as the SAT. In these evaluations, *IMP* students tested well against their peers in traditional programs. Other local evaluations reveal the same positive results. Data from Philadelphia, Denver, and sites in California all show *IMP* students doing as well as, and in some cases better than, students in traditional mathematics classes.

If you would like more information about the WCER evaluations or regional data reports regarding test scores of *IMP* students, please contact Janice Bussey of the *IMP* National Office at 1-888-MATH-IMP (1-888-628-4467).

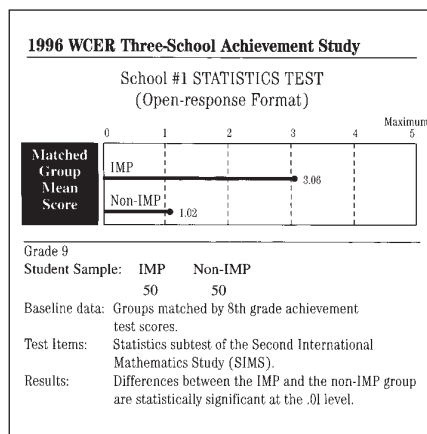


Chart of statistics portion of WCER study

Supplemental Problems in IMP™

Every *IMP* unit contains a variety of supplemental problems called “**extensions**” and “**reinforcements**.” Some *IMP* teachers use these problems as a way to provide honors credit to students, but you may prefer to let all students try their hand at these challenging activities.

EXTENSION PROBLEMS

The problem **Ten Missing Digits** is an extension that provides a challenging follow-up to a Problem of the Week in the *Year 2* unit, *Solve It!* Other extensions generalize concepts that are central to the unit or provide nonroutine applications of key ideas.

Put a digit from 0 to 9 in each of the boxes below so that these conditions hold:

- The digit you put in the box labeled “0” must be the same as the number of 0’s you use.
- The digit you put in the box labeled “1” must be the same as the number of 1’s you use.
- The digit you put in the box labeled “2” must be the same as the number of 2’s you use.

And so on. You are allowed to use the same digit more than once.

0	1	2	3	4	5	6	7	8	9

The Proof: There may be more than one solution to this problem. An important part of this activity is to prove that you have all the possible answers.

Variations: Adapt the problem to different numbers of boxes, such as boxes numbered from 0 through 4, or from 0 through 8.

REINFORCEMENT PROBLEMS

Reinforcements give teachers additional resources to use when the class or individual students need further work with a key concept or procedure. For instance:

- **Different Dice** (from the *Year 1* unit, *The Game of Pig*) asks students to find the probability of certain outcomes for a pair of dice. To make the problem more interesting, the dice are “nonstandard,” with each 4 replaced by a 7.
- **TV Time** (from the *Year 2* unit, *Is There Really a Difference?*) provides a new context in which students need to find expected numbers and use the chi-square statistic.
- **Rap Is Hot!** (from the *Year 2* unit, *Cookies*) considers an interesting variation on the situation in Homework 12: Rock and Rap. By working through this problem, students see how a minor change in a constraint can change the solution to a problem.

Counselor’s Advice . . .

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kids to imitate the teacher, not solve problems. All outcomes had been determined and the students were merely shown how to achieve them using the basic axioms of math. A truly great educational experience allows students to learn unintended lessons, to discover concepts and methods, to learn in their own unique fashion, to apply a lesson to a personal experience. Very few unintended lessons are learned in the traditional sequence.

The traditional sequence asks students to memorize and manipulate truths from the history of math. It teaches the mountain tops of math through memorization and imitation. This leaves students with a narrow, fragile background in math. Rote memory is far more brittle than true learning. If students can’t remember the formula or can’t remember how the teacher did the problem, they can’t apply mathematics to solve it.

The traditional sequence doesn’t prepare students to face problems and situations not seen before. They don’t achieve “spontaneous” math. The very culture of a traditional class retards spontaneous math. Students who can solve a canoe-upstream-downstream problem using guess-and-check instead of an equation with a complicated application of the distributive property, and the famous point-down triangle of simplification to a final step of $x = 5$, are discouraged from solving problems their way for a variety of pedagogical reasons.

IMP has students solve the problem before the teacher teaches. The underlying message is, “Students can solve this problem.” The culture of *IMP* is one of problem solving. Students are constantly encouraged to attempt to figure problems out before the class discusses which method may be better. By then, the algebraic solution may be fully comprehended and appreciated. This gives students an appreciation of why and how algebra and geometry can be used as tools. And if students forget the formula, they can either reconstitute the equation or use an independent strategy to solve the problem.

As a counselor, teacher, or administrator you’ll meet parents concerned about *IMP* because they don’t understand it. Some will imply that *IMP* is not difficult enough. They ask, “Where are the rigors of algebra?” This question can be answered in two parts. First, there is plenty of algebra, geometry, trigonometry, statistics, and probability in *IMP*. Second, the “rigors” is a condition in which the body stiffens after death. I’ve seen the rigors of algebra and it’s not a pretty sight.

Parents tend to be concerned about *IMP* and students’ college plans. Assure parents that colleges and universities accept *IMP* as a college preparatory math sequence. And inform parents about *IMP*’s ability to prepare students for the SAT. There’s ample data to support this claim. I was personally amazed by the response of my son—a *Year 2* student—to the PSAT. Not only was his score solid, but I could discuss any question on the test with him, whether he had ever seen the material or not, and he could understand and feel confident. My daughter, a veteran of the traditional sequence, couldn’t do problems that were new if they varied even slightly from what she had been taught. (Editor’s Note: see “Study Reveals Notable Achievement Among *IMP* Students” on page 2).

Regional IMPressions

ARIZONA Like others, Arizona *IMP* teachers spend many hours experiencing the curriculum and are engaged in professional development activities aimed at enhancing teaching strategies. Activities for this school year include:

- the improvement of classroom discourse,
- an increase in teacher reflection of practice, and
- an increase in the effective use of technology in the classroom.

As part of their professional development, some teachers are viewing video lessons of mathematics classrooms and reflecting on the teaching, learning, and mathematics content of the lessons. These videos are the basis for in-depth dialogue and discussion on content, teacher beliefs, and classroom practices.

Other teachers are choosing to improve the discourse in their classrooms by informally researching the dialogue and discussions between themselves and their students. They then set goals for improving discourse and work with an *IMP* director or a mentor teacher to implement strategies which enhance questioning and enrich dialogue (and learning). An audio tape or video tape of the classroom is used to give the teachers feedback on their implementation of enhanced discourse strategies.

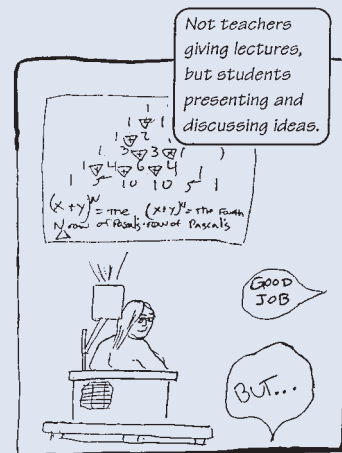
To improve the use of technology in their classrooms, teachers are engaged in a variety of activities including learning to use a graphing calculator more effectively, having students write computer programs related to the mathematics in the *IMP* units, familiarizing themselves with the Calculator-Based Laboratory™ (CBL™), and determining where and how this handy device fits into the *IMP* curriculum.

Summer Training:

IMP Years 1-4 July 6-16

CALIFORNIA

California's contribution to this newsletter was written by Caran Resciniti, an *IMP* teacher at Fresno High School in Fresno, California. Resciniti is part of a group that just completed its inservice after four years together. A special graduation ceremony was held for them at the end of the last inservice and this piece commemorates the event.



POW 99: The Last Null

Dedicated to The IMP 4 Class of 1998, Berkeley, California

There is no difference between the *IMP* curriculum and the traditional curriculum with respect to learning.

Well, I choose to reject this null hypothesis based on four years of research. If you take the word **INTERACTIVE** and discover the meaning for each letter, it goes something like this ...

- I is for the **integration** of strands this program is so good at doing. Because of the integration, students (including us) have become mathematically powerful. I have seen students tackle very difficult problems without fear. They appreciate and respect multiple strategies for solving problems. They are effective communicators.

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THE NATIONAL IMP WEB SITE:
www.mathimp.org

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N is for our **names**. We, the *IMP* 4 class of 1998, are known for our sense of style. We are proud to wear each others names. We are proud of our nicknames and pseudo names. What a unique way to build a network.

T is for our **trainers** who allowed us our space to be creative, but gave us the right direction to grow as great math teachers. We applaud Lori, Janice, Sylvia, Jim, George, Kathy, Donna, Dwight, Patricia, Jerry, Dave, Dan, Barbara, Linda, Margaret, and Mary Jo. We also applaud Sherry, Lynne, Dan, and Diane for their vision, because without them we would not be here today.

E is for the many **experiences** *IMP* brought into our lives. We have met wizards, traveled west, tossed more coins than the NFL, and rolled more dice than Las Vegas. We have swung pendulums, worked in the dark with flashlights, entered the world of bees, set off fireworks, and watched Alice grow and shrink. We have asked a lot of questions and collected more types of data than any research office. We made political decisions to determine whether to build malls or leave the environment to meadows. We found a great hideout for Madie & Clyde, we reached the limit in our small world. We played baseball and joined a circus. We became animators through programming. We have conducted polls and joined families of functions—all in the name of mathematics. And they say high school mathematics isn't fun.

R is for **Ryane's POW**. None of us will ever forget that day when Ryane shared his POW with Gwennyth.

A is for **Al and Betty**. We first met Al and Betty in Pig, but they seemed to visit us on a regular basis throughout the four years. Other characters had that same tendency to revisit us as well. What a great way for students to connect what they know to what they will know.

C is for the graphing **calculator**, which became our hero. We have come a long way from that first day when we were so pleased to be able to turn it on and off. We are not afraid to learn with each other.

T is for the **thinking** that this program engages us and our students to do. Our understanding of mathematics has grown exponentially over the four years, not to mention what it has done for our students.

I is for the **IN/OUT** tables we have written and analyzed. Four years ago, none of us knew that the IN/OUT table would be our saving grace. When all else fails, draw that IN/OUT table.

V is for the **victories** we have had together during the training and in our classrooms as teachers. It is also for the victories our students continue to have with the *IMP* curriculum.

E brings us to the **end**. We must realize that it is only the end of our formal training. We will continue to do what is right for our students. We have become great friends and equally as important, we have become strong teachers. If I may quote a statement from TOPS (California Leadership Workshop) that goes something like this: Tomorrow we will go back to our separate schools, but we must remember that we are all on the same campus.

Summer Training:

IMP Years 1-4

June 17-20 (Oxnard, CA)

IMP Years 1-4

June 22-26 (Berkeley, CA)

HAWAII With the School-to-Work program going strong in the state, schools such as Waialua High School and Waiakea High School are finding that *IMP* meets their students' needs well, not only in terms of alignment with Hawaii Content and Performance Standards, but also with School-to-Work principles such as learning mathematics in the context of real-life situations.

In January, a video describing *IMP* in Hawaii was well received by the Assistant Superintendent for Instruction. The Assistant Superintendent has shared this video with principals as part of Hawaii's literacy project. The video will be used by Hawaii's *IMP* schools during Family Nights, student orientation/registration and other related activities.

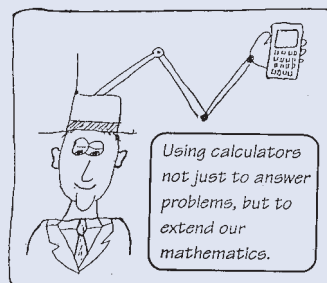
Kudos to Wendy Tokumine from Farrington High School. She was selected as Hawaii's Secondary Mathematics National awardee for the Presidential Award for Excellence in Mathematics and Science Teaching.

Summer Training:

IMP Years 1-4

June 15-July 3

ILLINOIS Chicago Public Schools are going through a process of developing and implementing math standards and course exit exams based on the NCTM *Standards* and an integrated curriculum. This makes consideration of changing to a curriculum like *IMP* even more desirable.



Other high-stakes tests, administered to determine the probation status of schools, are also based on a problem-solving and integrated approach to mathematics. The Illinois Regional Center, operating under funding from the National Science Foundation and other sources, is able to support high school

mathematics departments in making the transition to a *Standards*-based teaching and assessment program using the *Interactive Mathematics Program*[™] curriculum.

Future Commons High School on Chicago's south side has fully implemented the *Interactive Mathematics Program*. The school has a philosophy of project-based learning with integration across disciplines. Mathematics teachers Regeta Slaughter and Greg Redfeairn think that adopting *IMP* is an effective way to begin the process of building a coherent school-wide curriculum, while not compromising the quality and range of the mathematics program. And principal Constance Montgomery attributes the students' success in reading and interpreting Shakespeare to their *IMP* reading, interpretation, and problem-solving experience. As for Future Commons' recent success on the Illinois Goals Assessment in mathematics and reading, *IMP* teacher Greg says "We'll take the credit for that, too!"

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**IMP CARTOONS BY STUDENTS AT
BERKELEY HIGH SCHOOL, BERKELEY, CA**

Regional IMPressions

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The Illinois Regional Center is currently working with 16 schools in Chicago ranging from traditional, large, full-service urban high schools to small, alternative public and private schools. Two *Baker's Choice* workshops this spring have also involved schools from northern Illinois and Indiana in an introduction to *IMP*.

Summer Training:

- IMP Year 1** July 13–17
July 20–24
July 27–31
August 17–21
- IMP Year 2** August 3–7
- IMP Year 3** August 10–14

MIDWEST In November, three Minneapolis *IMP* teachers were awarded certification by the National Board of Professional Teaching Standards. The teachers are Carol Borne and Jane Kostik from Patrick Henry High School and Laura Myers from Washburn High School. Only 47 high school mathematics teachers in the country have received this certification. Carol Borne was also a finalist for the Presidential Award for Excellence in Mathematics Teaching.

In addition to the *IMP* implementation grant, Minnesota has been fortunate to have other NSF help in supporting NCTM *Standards*-based reform. We have just finished four years of Project Open Access, an NSF-funded project designed to introduce secondary math teachers to reform curriculum and encourage them to try lessons and replacement units in their classrooms.

We are now beginning a new grant, (MASP)², which will support full implementation of NSF-funded secondary curriculums. This project is a collaboration of 24 school districts in the Minneapolis/St. Paul metropolitan area. Districts who choose to implement an NSF-funded curriculum (including *IMP*) will be supported with 130 hours of training per implementing teacher, as well as mentoring services. This year, as a mentor under the (MASP)² grant, Jean Stilwell has had contact with 100 teachers throughout the Minneapolis/St. Paul metro area.

Districts are now in the process of identifying which curriculums they will use and how many teachers will need training. The grant can fund support to 500 teachers, but preliminary indications are that demand for the training will exceed that number. This grant, along with new state graduation standards, is having a major effect on moving school districts to reform their math curriculum.

Summer Training:

- IMP Years 1–4** August 17–21

NEW ENGLAND *IMP* is now being implemented in 30 schools in New England—including our first high school in Maine—with over 100 teachers teaching *IMP* classes. We have started

analyzing last spring's SAT data in our three focus schools, and the results look good. At Arlington High, Brookline High, and Silver Lake in Massachusetts, the *IMP* students outperformed non-*IMP* students. Also, Carver High School, which started *IMP* last year, reports that it administered the Terra Nova test to its *IMP* students and to matched groups of non-*IMP* ninth graders and the *IMP* students outperformed the non-*IMP* students in every strand.

Our first graduates are receiving early acceptances from the Universities of New Hampshire, Vermont, and Massachusetts; Providence College; Wesleyan University; Union College; Cornell University; Emanuel College; and Babson College. In his early admissions interview at Providence, a Silver Lake student explained *IMP* and was told “that’s exactly what we are trying to do with our math curriculum.” An exchange student from Germany in *IMP Year 3* at Arlington is delighted to find such a good fit for his year of study in the U.S.

Our rapid growth coupled with several retirements are creating vacancies for *IMP*-able math teachers throughout the region. Any candidates can contact us at (617) 373-2328.

Summer Training:

- IMP Years 1–2** July 6–10 and August 17–21
- IMP Years 3–4** June 25–July 1

NEW YORK New York City began in 1996 with 4 schools, 12 teachers and approximately 400 students. This year, 15 schools, 55 teachers, and approximately 1,600 students are involved in *IMP*.

The Chancellor of New York City, with approval from the Board of Education, has adopted the *New Standards Performance Standards*. Mathematics educators from across the city convened to review the student work collection in the *Performance Standards* books. It was decided additional samples of student work would be added to further enhance the collection. The teachers and supervisors implementing *IMP* felt very comfortable with the *Standards* and contributed most of the student work for the committee to review. Upon reviewing the *Performance Standards* one teacher commented “I am doing this everyday because I use *IMP*!” Our *IMP* group is on the right track!

Franklin K. Lane High School decided to make its *IMP* students extra special. The Assistant Principal enlisted a Lane graduate to donate T-shirts for the *IMP* students. Students had a design contest for the T-shirt and the winning design was printed on the shirts. Other schools have conducted parent orientation workshops and are planning to produce a parent newsletter.

We continue to conduct productive monthly professional development sessions to provide an opportunity for teachers to become familiar with each unit, network, and discuss common issues.

Summer Training:

- IMP Year 1** July 7–9 and August 25–27
- IMP Year 2** July 7–9 and August 25–27
- IMP Year 3** June 28–30

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NORTHWEST *IMP*-NW is in the midst of a matched-pair study that looks at the success of *IMP* students as compared to students who were enrolled in the traditional sequence. The study involves a transcript analysis of students enrolled in either *IMP* or the traditional sequence at the same high school, as well as traditional sequence students from a comparable high school where *IMP* is not offered. Three different graduating classes are represented in the study—students entering high school as freshmen in 1991, 1992, and 1993.

Pairs of students from the two groups (*IMP* and the traditional sequence) were matched according to gender and scores received on an 8th grade test given by the school district. Of the 115 students who enrolled as *IMP 1* freshmen in 1991, 107 were able to be matched with the traditional sequence students. With this study, a number of questions will be addressed which are often raised concerning reform curricula in general and *IMP* in particular. Principal among those questions are those of student persistence in mathematics and student achievement in mathematics. For example, is there a difference between *IMP* and non-*IMP* students with regard to how long they continue in and remain successful in high school mathematics classes? Also, how do the two groups compare with regard to grades and SAT scores? Some preliminary results have already come in which are all very exciting for *IMP*.

Summer Training:

IMP Years 1–4 August 3–7

NOVA SCOTIA *Impacts Mathematiques*, the *IMP* French-language program, began in the 1996–97 school year with six francophone schools and five French immersion schools. As the 1997–98 school year begins, the use of *Impacts Mathematiques* as a resource for our new mathematics program has expanded to most grade nine francophone and French immersion schools.

Due to the commitment and dedication of our *IMP Year 1* teachers, administrators, and the Atlantic Provinces Education Foundation (FEPA) last year, nine new high schools served for the 1997–98 school year as pilot schools of *IMP Year 2*.

With the help of Dennis Cavallé, a French speaking mathematics teacher from California, we have been able to offer our *IMP* teachers two, one-week summer institutes (August, 1996, and August, 1997) and two, three-day workshops. Also, the Director of *Impacts Mathematiques*, Antoine Jarjoura, visits the schools on a monthly basis in order to meet with the project teachers and offer them support.

PENNSYLVANIA We have several exciting developments taking place at the Philadelphia region *IMP* center. First, we are awaiting final word on our Local Systemic Change grant proposal, which we recently submitted to NSF. If funded, the grant will enable us to provide staff development in *IMP* and other reform

mathematics projects to over 600 teachers in the greater Philadelphia and southern New Jersey area.

Last spring, crews from the Philadelphia Broadcasting System spent two days filming *IMP* classes and interviewing *IMP* students at Central High School. *IMP* will be featured in the final episode of a seven-part series, “Life by the Numbers,” which will air nationally this April.

Congratulations go to Barbara Mosely, one of our veteran *IMP* teachers. Barbara was recently named Mathematics Teacher of the Year of the Delaware Valley. She credits *IMP* with rejuvenating her teaching career.

IMP students from our first graduating class are now completing their first year of college. Several students visited their *IMP* teachers over semester break and reported very positive experiences with their collegiate mathematics courses. We have initiated a formal survey of all our *IMP* graduates’ college experiences and also continue our ongoing matched-sample statistical analyses comparing *IMP* and traditionally taught students on various high school achievement indices.

Summer Training:

<i>IMP Years 1 and 3</i>	July 13–20
<i>IMP Years 2 and 4</i>	July 20–27
<i>IMP Year 1</i>	August 24–28

ROCKY MOUNTAIN Because of our growth and the need to diversify responsibilities, the *IMP*-RMR organizational structure has expanded into what we call the “Directions Team”. Michelle Novotny, a veteran *IMP* teacher, facilitates the program coordinator component of our project and the development of a teacher curriculum. Alan Olds, a language arts teacher at a non-*IMP* school, facilitates the electronic communication networking component. Lew Romagnano is organizing the “practical products” of our project and Sherri Stephens-Carter is facilitating the collection of student achievement data. Jean Klanica facilitates the overall administration of the project as well as the financial component.

There are 23 schools involved in our program, including 21 schools in Colorado, one school in Cokeville, Wyoming, and one school in Albuquerque, New Mexico. We will be adding seven new schools for the 1998–99 school year, including two inner city schools, three rural schools, one private suburban school, and a New American School. The number of schools in our program, along with the geographic and demographic diversity of those schools, are the elements behind our most pressing issue at this time: to create a method of operation that will provide a quality support system for our teachers.

Summer Training:

<i>IMP Year 1</i>	June 22–July 2
<i>IMP Year 2</i>	June 22–26
<i>IMP Year 3</i>	June 26, 29, 30 and July 1–2
<i>IMP Year 4</i>	June 26, 29, 30 and July 1–2
Leadership	June 22–25

Key Comments

It's All Write: A Writing Supplement for High School Mathematics Classes is now available! This one-week unit gives shape to *IMP*'s emphasis on communication and writing skills in the mathematics curriculum. The primary goal of *It's All Write* is to have students reflect on and improve the quality of their mathematical writing. They'll also learn about holistic scoring and about the creation and use of rubrics, using papers they've written. And they'll learn more about what *you* think about and look for when grading their papers. *It's All Write* can be used in any year of *IMP*, as well as in all other secondary-level mathematics classes.



In other news, Key Curriculum has been hosting a series of free *IMP* Awareness Workshops. These one-day sessions are intended for teachers and coordinators not yet familiar with *IMP* who are interested in learning how the program works. Workshops have been held in Baltimore, Maryland; Pittsburgh, Pennsylvania; and Athens, Georgia. Two more are scheduled in Bronx and

Long Island City, New York. For more information—or to pre-register—call (800) 995-MATH.

Questions about *IMP* may be directed to Janice Bussey at (888) MATH-IMP (888-628-4467), the *IMP* Information Line. Or visit the *IMP* Web site at www.mathimp.org, which is also accessible from the Key Curriculum Web site at www.keypress.com.



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IMP User Group Meets at NCTM Annual Meeting It'll Top the Charts in DC!

We are looking forward to seeing old friends and meeting new ones at our third annual User Group Meeting at the NCTM Annual Meeting in Washington, D.C., co-hosted by *IMP* and Key Curriculum Press. Those of you who are already fans and those who are interested in finding out more about *IMP* are cordially invited to bring your friends and join all of us from Key and *IMP* for a medley of greatest mathematics hits from *Years 1-4*.

Please "Stop—in the Name of Math" on Friday, April 3, from 6:00 PM– 8:30 PM at the Grand Hyatt Hotel Constitution Ballroom. Enjoy the company of colleagues from around the country at this musically-themed gala, while enjoying great refreshments, beverages, and conversation. You'll also hear about jazzy classroom hits, exciting ideas, and activities from classroom teachers, regional directors, and the national program directors.

If socializing and classroom hits aren't enough for those of you who were "Born to be Wild," we're planning other fun activities and door prizes. Join us and "Stand By Your Math" favorites. The Key Notes, the house band including Key Curriculum President Steve Rasmussen and Vice President Marketing and Sales Madeleine Mulgrew will be on hand to greet you and serve as warm-up for our Star Performers Lynne Alper, Dan Fendel, Sherry Fraser, and Diane Resek!

We look forward to spending the evening with you on April 3!

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