Project Report

Memo to: Math Department Chair

From: Jon

Re: Recommendation re possible adoption of Connected Mathematics Project

I. Summary of Recommendations

In response to your request that I evaluate Connected Math as a possible curriculum choice for Silicon Valley Middle School, I have conducted a careful review of the program. My recommendation is that the program not be adopted as a wholesale replacement for our current programs, principally because of the subject matter gaps it suffers. I do not consider it feasible to supplement the program to cure those deficiencies, because of time constraints. Instead, I suggest that the materials be acquired so that individual faculty members may adopt or adapt portions of the program to supplement the existing curriculum, where they might find it useful on particular topics.

II. Overview of Connected Math

A. Theoretical and Philosophical Basis

Connected Math (sometimes called CMP) is an interesting blend of two different reform strategies. In the research literature, it is often lumped with other programs under labels such as standards-based approaches , but it actually follows a philosophy that is most closely aligned with the teaching for understanding movement. These classifications apparently arise from the means used by the program designers to choose the content of the program. Philosophically, the program designers are quite clearly and admittedly at home in the less is more camp, with an overwhelming bias toward teaching for understanding. However, that approach ultimately requires that choices be made as to what should be understood deeply and what material may be omitted from the program. CMP purports to rely upon and be faithful to the 1989 NCTM Standards as the basis for identifying what is to be kept and emphasized and what is to be deemed non-essential and omitted in trade for depth elsewhere. Thus, it is promoted by the publisher as a standards-compliant program to teach for understanding.

The core aim at work here seems to be making sense of math and its uses. As the name of the program suggests, the designers believe that making sense comes most easily from appreciating connections within and across subject matter. CMP is intended to foster connections:

" across core ideas in math

" between mathematics and its applications in other school subjects

" between classroom activities and the interests and aptitudes of students

" among mathematics strands of modern secondary school programs, and

" with the applications of mathematical ideas in the outside world.

By guiding students to discover these connections, the designers hope to reach a single over-arching goal:

> *All students should be able to reason and communicate proficiently in mathematics. This includes knowledge and skill in the use of the vocabulary, forms of representation, materials, tools, techniques, and intellectual methods of the discipline of mathematics including the ability to define and solve problems with reason, insight, inventiveness and technical proficiency.*

Although the terms knowledge and skill are used in that statement, the emphasis is plainly on sense-making and deep understanding, consistent with the view of mathematics as a scholarly academic discipline. Skill in this context is not traditional computational prowess, but the ability to gain insight and understanding. Indeed, the designers have expressed the view that students who complete the CMP program and proceed to higher level courses that are blindly taught in the traditional manner (without making concessions or accommodations for the enhanced conceptual grasp of the CMP graduates in attendance) will see no motivation for the different form of skills they are asked to learn there, and are likely to feel frustrated.

Connected Math is also based upon the notion that content and process goals cannot be treated separately; that is, *how* students learn shapes *what* they learn. Consequently, mathematically processes are, in their view, inseparable from mathematical content. Nonetheless, some separation is necessary for description here. Following the organization of the NCTM standards, CMP sets content goals for number, geometry, measurement, algebra, statistics, and probability. (These strands are somewhat differently organized but are not inconsistent with the California Framework.) The 1989 NCTM standards also set out process aims including problem solving, communication, reasoning, and connections. CMP adopts these but grafts on several additional specific process ideas, all in the form of verbs reflecting student abilities and inclinations. These are: count, visualize, compare, estimate, measure, model, reason, play, and use tools.

One of these, play, is noteworthy at least for the choice of words. What the developers mean by this term is having the disposition and imagination to inquire, investigate, tinker, dream, conjecture, invent, and communicate with others about mathematical ideas. Ordinarily, I would have expected a term such as curiosity to capture the essence here, perhaps supplemented by a bit of courage reflecting a willingness to try new things. The explicit use of the term play suggests that having fun is central. This is certainly a worthwhile aspiration, not often addressed elsewhere. It is difficult to tell whether this goal is often achieved with CMP.

B. Typical Lessons and Assessments

1. As Designed

Consistent with the mind set described above, the designers have chosen a set of five instructional themes, which they attempt to carry through all instructional units. The first of these is teaching for understanding. CMP approaches this by purporting to organize the curriculum around mathematical big ideas , which are clusters of related concepts, processes, ways of thinking, or problem solving strategies. The big ideas are then to be studied in depth, with understanding as the goal.

The next theme is, as the program title suggests, connections. This is most typically approached by selection of contexts for problems and investigations, and by the occasional raising of recurring themes across problems and units, and years.

The third theme is mathematical investigations. Consistent with constructivist ideas of learning, the program attempts to present carefully constrained opportunities for discovery of mathematics, as opposed to explicit direct authoritative instruction on externally established mathematical truths. CMP promises that its materials offer rich problem situations for that purpose.

The fourth and fifth themes are representations and technology. Whenever possible, students are urged to use graphic, numeric, symbolic, and verbal expression of the same relationships. They are also encouraged to use calculators, and in more limited circumstances such as probability studies, computer software. Appropriate choice of tools is an important element of the process goals listed above.

CMP consists of a set of 24 complete units, eight per grade level from 6th through 8th.[1] Each has a title intended to be catchy, such as Say It With Symbols (8th grade equations) and Prime Time (6th grade prime numbers, factors, and multiples). Any given unit presents a common format, with the following features:

- focusing questions, intended to spark curiosity at the beginning
- mathematical highlights, explaining goals and rationale for the activities
- a set of four to seven investigations, with:
  - a theme-setting discussion, in which the investigation is launched by the teacher
  - one to four problems to be explored by groups
  - an applications - connections - extensions (or ACE) section, typically to be used for homework, and
  - a guided mathematical reflection, with prompting questions.

Some units will also include a project, others do not.

The CMP designers endorse the use of group work, particularly work in pairs. Whole class discussions are suggested as appropriate for wrap-up and summary matters. The applications - connections - extension work and the reflection are generally intended as individual

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[1]Catalog prices for materials run approximately $6 per student per unit, or $48 per year, to cover softback books, some with sections that are designed to be written in and would not be suitable for re-use. The costs for manipulatives, calculators, and consumable student materials must be added, plus approximately $130 for teacher materials. Some of the suggested software may be downloaded for free.

efforts, but problem solving is to be approached cooperatively (this is apparently in part to aid in developing competency in mathematical communication). Notebooks, journals, and vocabulary lists are also viewed by the designers as useful tools, with frequent comparisons to their use in language arts classes.

Assessments tools are provided as well. The suggested scheme is to use a check-up , or a small skill testing problem frequently. Partner quizzes are next in the list; it is suggested that a single quiz be signed with both names, and that an opportunity for revision be provided after feedback, much like writing exercises in English classes. Projects are generally intended to include significant take-home work, and to be open-ended tasks. Unit tests, and guided self-assessment round out the list. Finally, a question bank is provided for such diagnostic purposes as the teacher chooses. Enough samples are provided for each of these to eliminate any need for a teacher to construct assessments independently.

The teacher s guide, Getting to Know Connected Mathematics , states that all of the CMP materials are in the nature of suggestions, providing possibilities that a reflective teacher will use to craft one s own instructional practice. This is not entirely consistent with the hype accompanying the program, which suggests that full and faithful implementation of the program is necessary to reap the benefits fully (more about this below).

2. In Practice

I have had the opportunity to visit an 8th grade classroom in a nearby district where the CMP materials form the basis of the curriculum. I have discovered that it is not uncommon for a class to complete only part of the units intended for that year. In recognition of that state of affairs, units are sometimes taught in a different order than recommended (CMP uses the term recommended , rather than required). Some minor supplementation of the materials is common, where a teacher has a preferred spin to put on one topic or another, or feels that the students need additional attention, but for the most part, the program is presented largely as intended in the classes I have witnessed. Effectiveness of the classes I viewed seemed to hinge critically on cooperative skills of the students in group settings, the efforts made by the teacher to provide meaningful summing-up following an activity, and the teacher s skill in facilitating meaningful mathematical discourse.

The most noteworthy comment made about the program by teachers was that it is not well tuned to cultural diversity issues. To be fair, the teacher materials do contain suggestions for adaptations for linguistically diverse classrooms (although some of those strike me as bordering on the absurd, such as constructing rebuses with pictures to substitute for unknown words).[2] Some care has also been put into the selection of names used in the problems (both Keiko and Cathy in the same problem, for example). However, from the standpoint of the minority teachers I interviewed, these are patched-on efforts to bring the students to the material, and not the other way around. Too many of the problem settings reflect dominant, mainstream cultural assumptions of questionable validity for the diverse population of our district.

My own review of the materials shows that some of the investigations are less open-ended and rich than advertised. For example, Investigation Five of the Prime Time unit asks students to search a number grid puzzle for factors that have a product of 840. There is little rich content to be discovered here, and the open-ended nature of this task is limited to variations in the thoroughness of the search. I have also found it difficult to discern what the big ideas are in several places; I suspect that they are more in the nature of a generic organizing topic than an

[2]One teacher, using CMP materials in a SDAIE classroom (specially designed academic instruction in English), found the language suggestions generally unhelpful.

essential question in the Wiggins sense.

C. Effects on Achievement

CMP publicizes a number of quantitative and qualitative studies to indicate the value of the program as measured by outcomes for students. I have looked at much of this research, and objectively, it appears that the program can produce modest gains in some circumstances. The spin most commonly used is to portray CMP students as doing no worse than non-CMP students on skill measures, but performing better (or at least showing more growth) on measures of problem solving and communication. Some claims are made for better growth of performance for particular categories of students, such as African-Americans. The attachments to this memo include salient excerpts and full citations to the work.

One study, conducted by Hoover[3], Zawojeski, and Ridgway, used two different tests. The first of these is the familiar Iowa Test of Basic Skills. Sixth and Seventh graders were tested twice in the 1994-95 school year, to measure growth from fall to spring; a different composition of eighth graders were tested twice the following year. These were the 4th and 5th years of field testing of the program. The claim made for this testing is that comparable gains were made by the CMP students, when compared with students who did not use that program. Plots for the trend from fall to spring show a slightly slower growth for CMP sixth and eighth graders, and nearly identical slope for seventh graders. In terms of absolute scores (as contrasted to growth in scores), the non-CMP students outscored the CMP students in the lower two years. This data is

[3]Hoover is faculty at Michigan State, where CMP was developed, and should not be viewed as independent of the project. One of the assessments used was developed in cooperation with CMP.

apparently presented to dispel fears that a loss of attention to basic skills would cause an erosion of student competency. No claim is made for increasing such competency; merely an assertion that CMP students do no worse on the whole.

The real claim for progress in reflected in the other assessment tool, a modified Balanced Assessment. In this instance, the designers have attempted to reverse the common phrase and test to the teaching . It appears that the CMP designers (and at least one author of this study) sought a tool to measure what they thought most important about CMP. Working with another NSF funded project, they adapted the Balanced Assessment for their purposes. The test as used contained open response items to probe reasoning, communication, making connections, and problem solving. A significant difference argued by the researchers is that the Iowa tests are heavily weighted toward number and operations problems; the balanced assessment is argued to provide a more even-handed topic distribution, with higher emphasis on geometry, algebra, and statistics. Growth figures (score differences from beginning to end of year) are reported for this test. Raw score growth for the CMP students is higher, but the margin is not extreme. For example, for sixth graders, the Iowa growth was 4.4 versus 5.6, favoring non-CMP, while the Balanced Assessment growth was 8.3 versus 4.8, favoring CMP. Absolute scores are not reported for any grade level, and no longitudinal data is given, making it difficult to sort out the effects of different populations or evaluate the long term effect of using the CMP program.

A survey of the other published results provides some limited evidence of effectiveness. A paper by Lapan[4], Reys, Barnes, and Reys (the University of Missouri Study) considered impact on three math achievement tests (Missouri s MMAT, the SAT 9, and the SAT open-ended

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[4]Not the Lappan who is an author of CMP.

problem solving test or MPST). Some inconsistency in test administration is seen here; the control group was given the California Achievement Test version 5, and scores were linearly transformed for comparison with SAT 9 scores from the experimental group. CMP students are shown to score higher by margins such as 72 to 63; however, the sample size is frightfully small (only 46 controls and 94 CMP students). For African-American students, the margin grew from 9 points to 16, from which it is concluded that the program may be particularly beneficial for that group. The small sample makes this a well-documented anecdote, not a general indication of program effectiveness.

Data is also reported, for example, from the Arkansas 8th Grade Benchmark exams and the Maine Educational Assessment II. These instruments share a common reporting structure, classifying students into one of four categories indicating whether they fall below standards, partially meet them, meet them, or exceed them. In each case a discernible, although not dramatic, shift in the distribution can be seen. For example, Maine reports that 41% of non-CMP students were partially meeting standards while only 38% of CMP students fell into that category. These studies, and another from Minneapolis, distinguish full implementation CMP schools, where teachers participate in summer institutes and at least two years of prior use of the program, from less committed implementations. This is somewhat inconsistent with the guidance offered to teachers to consider the program to be one of suggestions and possibilities. Small benefits are claimed only where the program is used faithfully.

Another report provides data for the Texas Learning Index as administered in Plano, Texas (the locale is significant for reasons to be explained below). This data is purportedly offered to show growth impact especially for economically disadvantaged, Hispanic, and African-American students. Average growth scores are reported, with a zero indicating normal progress.

African American students showed an average TLI growth of 9.95 in non-CMP and 11.33 in CMP. Gifted and talented students showed a growth of 1.34 in non-CMP and 1.89 in CMP. For all students considered together, the growth comparison is 4.91 to 6.11. The actual scores on the relevant section of the TAAS, from which the growth index is computed, show the non-CMP students scoring consistently higher by moderate to small margins. Dramatic improvement is not to be found here.

I did not find any evidence tracking long term results, such as performance in high shcool mathematics courses or on high school level standardized tests. Enough time has passed since field testing began for such information to have appeared.

III. Parental Response Issues

An important consideration in adopting Connected Math is the expected response of parents. CMP has a history of generating controversy, some of which is directly aimed at this program, and some of which is more generally aimed at reform movements in mathematics.

Parental revolts (there is no gentler word that adequately captures the vehemence) have started in many locales. In California, there has been strong state-wide opposition to several reform programs, including CMP, and considerable coordination of efforts across districts by like-minded activist parents. A taste of this can be had by checking the mathematically correct web site (see www.mathematicallycorrect.com) which proudly reports victories when a program is expunged from San Diego schools, for example, and has published a scathing review of 7th grade CMP. My review of such materials indicates that some of it is based upon a distrust of group work and heterogenous ability groupings as threatening to the prospects for high performing students getting maximal benefit and ultimately, elite college admission. For convenience, I will call those equity issues. Some is based upon a distrust of the constructivist theory of learning and concomitant discovery/investigation models for teaching, perhaps best labeled pedagogical issues.[5] The remainder of the resistance is based upon the difference in emphasis provided by the NCTM standards, and the extent to which students today are presented with different content than their parents. All three types of issues are intermingled in very vocal complaints.

For our purposes, we are likely to face the equity issues with any program, so long as teachers use heterogeneous grouping. Consequently, I do not consider that factor to be significant for the program choice. To some extent, this is also true for the pedagogical issues. Most teachers adopt some form of discovery learning, at least periodically, with our current curriculum. This may be unfamiliar to the parents, but I suspect that it would not unduly arouse parent complaints if not coupled with content issues. The content issues are somewhat more complex, and will be discussed in more detail below. In short, most parents are not familiar with, for example, the probability and statistics content that is now called for by the California Framework; we may choose to address that material with whatever program we select. However, as discussed below, the real arguments arise from what is left out of the program.

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[5]Typically, parents do not understand why the teacher doesn t simply tell the child the appropriate formula and get on with it , as was done in the parent s day, instead of sending the child off presumably to stumble upon the solution by herself. This is at least in part a failure to communicate to the parents that the discovery process is selected not for efficiency in information transmittal, but for maximum effectiveness in concept formation. It also reflects a failure to communicate that discovery exercises are usually guided and constrained investigations and not wild goose chases. In a similar vein, parents are also concerned about the perception that reform math now encompasses the possibility of multiple correct answers to mathematical questions, which suggests an absence of rigor. This is reflected in the mathematically correct masthead, which reads 2+2=4" and announces that there is a single mathematically correct answer. Here, there is a confusion between multiple equally valid solution strategies which lead to mathematically equivalent results on the one hand, and multiple answers to the same computation on the other. Most of these concerns are in essence, merely a product of bad public relations.

There is a great deal of history in nearby districts. In Palo Alto, a group known as HOLD (Honest Open Logical Debate on math reform, see www.rahul.net/denhbase/hold/) reflected a grass-roots efforts to purge reform instruction from the district. Fanning the flames for this battle was the perception of a precipitous drop in national percentile ranking for Palo Alto students in computation on the Stanford Achievement Test (a slide from 86 to 58 from 1992 to 1994), which was blamed on reform curriculum, and a claimed abandonment of basic skills instruction. In a district with highly educated parents who see competition for elite colleges as a primary justification for secondary education, the pressures were enormous. As time passed, parents resorted to privately funded out-of-school tutoring to make up for what they perceived was missing from the curriculum, and complained bitterly to the school district about that hidden cost of public education. Following this bruising, there is now little steam left in the reform movement in Palo Alto.

More recently, a parent group has targeted CMP in particular. The Plano (Texas) Independent School District has adopted CMP, to the dismay of many parents. Plano is a north Dallas suburb, home to Ross Perot s former computer company EDS, among other employers. Adoption there led to petition drives, and even litigation under a Texas statute permitting parents to demand alternative instruction under certain circumstances. See www.cmpinpisd.freeservers.com. These opponents have tracked performance data, prompting the release by the school board of the data in the study described above in an attempt to counter their arguments.

The CMP designers have made a half-hearted attempt at coping with parental resistance in the teacher materials. The official suggestions are that teachers provide an initial letter to parents, with a general program description. Later letters should provide specific unit details, with suggestions for how parents can help. Parent meetings, up to four times annually, are also suggested. At these meetings, parents should be given the chance to role play and sample the student experience with CMP. It has also been suggested that this is a good opportunity to allay any fears over the use of graphing calculators. All of these efforts may help, to the extent that they explain to the parents why the student s work does not resemble the tasks that the parents were once called upon to do, and to the extent that they reveal to the parents that there is mathematical content to be gained from some of the stranger activities (such as tossing marshmallows to count how often they land on end versus on their sides).

A slightly different issue, however, is the issue of inability of parents to assist their children with homework because of unfamiliar content and/or form. The official CMP proposal is to set up after school tutoring, perhaps using high school students guided by the teacher, to provide the assistance the children need. This, however, addresses only half the issue. Parents want to be able to provide the assistance themselves, and this requires that they know the mathematics in question. Many parents consider themselves competent to do so with what they perceive to be ordinary middle school math, but cannot fathom what is going on in some of the CMP investigations. The CMP designers have not dealt with this issue. The most they have provided is a brochure, Helping your Children Learn Math , that provides a set of prompting questions to ask a child (generic to any topic), suggestions for helping your child to get organized with resources, equipment, and habits of diligence, and suggestions to enhance positive attitudes toward math.

I have not proposed a plan for coping with parental resistance, because I do not believe that it will be the ultimate deciding factor. Content is the critical matter.

IV. Content Issues

As indicated above, choices had to be made in the design of CMP to sacrifice breadth for depth and achieve deep understandings. To a limited extent, the program developers have been forthcoming about the details, as shown by the excerpt below from Getting to know CMP" -- An Introduction to the Connected Mathematics Project .

What the Traditional Curricula (Algebra 1) Include that CMP Does Not

-- Emphasis on manipulating symbolic expressions, such as multiplying and factoring polynomials.

-- Operations on algebraic fractions

-- Formal solutions of linear systems in 2 or more variables.

-- Formal study of direct and inverse variation.

-- Radicals and simplifications of radicals.

-- Operations on polynomials other than linear polynomials

-- Completion of the square and the quadratic formula

What CMP Curriculum Includes that the Traditional Curricula Do Not

-- Emphasis on variables and the representations of the relation between variables in words, numeric tables, graphs and symbolic statements.

-- Focus, on the rate of change between two variables, not only linear.

-- Development of functional point of view and applications.

-- Emphasis on modeling

-- Earlier introduction of exponential growth and decay

-- Development of alternative strategies for answering questions about algebraic

expressions and equations, e.g., tables and graphing calculators

It is interesting to note that the additions made to the traditional curriculum are primarily in the nature of emphasis or focus on an aspect, suggesting greater depth but no additional breadth. This is perhaps what one might expect from a less is more approach.

While the explicit choices described above are not directly inconsistent with the NCTM standards, they are of concern to me, and should be to the Department, because of their implications for readiness for high school classes. The CMP program materials suggest that many students who have completed grades 6 through 8 in CMP will be in a position to skip the traditional first year of high school math:

> *What can I expect my students to know about algebra after three years in the CMP curriculum?*
>
> *With three full years of the CMP curriculum, many students should be able to skip the traditional first year of high school mathematics.*

(Frequently Asked Questions.) This claim is simply not credible.

CMP provides an inkling of the rate of change of quadratics, as compared to linear equations, but omits finding the roots with the most general form of solution, the quadratic formula, and performing operations on polynomial expressions of quadratics. It provides an introduction to the Pythagorean Theorem, but does not cover operations with radicals that are part and parcel of solving triangles. It addresses factors as a matter of number theory, but does not generalize it to polynomials (this is a particularly strange choice, given that depth of understanding and connections are supposed to be paramount). It draws no connections between expression of fractions and rational algebraic expressions. Although it purports to address single linear relations as functions, it does not adequately address systems of linear equations.

These are strange choices, and ones that will not leave a student well equipped for Geometry and Algebra II. In my view, there is an over-emphasis on probability and statistics built into this program, material that will not be carried forward into math later courses and could easily be jettisoned in exchange for real depth in algebraic development.[6] As I see it, the choice was made to touch upon each strand within the NCTM standards, at the expense of depth within the more important strands. These strands are certainly not all of equal significance within a disciplinary approach to mathematics, and if reasonable content compromises are to be made, that fact must be kept in mind.

Review of the literature suggests that I am not alone in my concerns over the content choices made by the program designers. For example, CMP has the interesting distinction of being simultaneously lauded and condemned by prominent authorities. The federal Department of Education has applauded CMP as one of only five exemplary programs for K-12 mathematics (see www.enc.org/ed/exemplary). The announcement of this honor drew a sharp response form the academic mathematics community, including an open letter signed by some 200 prominent faculty.[7] While some of the criticism dealt with other design issues, much of it is directed at the content deficiencies.

In particular, a paper by Prof. James Milgram of Stanford s Math Department points out a

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[6]Some redundancy on the topic of data analysis is to be expected in science courses in any event.

[7]This is an interesting state of affairs for educators who believe in a disciplinary approach to the subject. The educational establishment stands behind this program, while those practicing in the mathematical disciplines seem lined up against it. One must wonder to what extent this split is a downstream effect of inadequate involvement by professional mathematicians in the setting of the NCTM standards.

host of curious omissions from the CMP content (see www.math.stanford.edu/pub/papers/milgram/report-on-cmp.html).[8] Milgram complains that there is an over-reliance on the student s own constructed algorithms and the use of calculators. Standard algorithms are never introduced, not even for adding, subtracting, multiplying, and dividing fractions, even after investigations are done; calculators are relied upon instead.

Adding my own views to Milgram s, I find the absence of the standard algorithms an odd choice. While it makes sense for students to experiment to build understanding, it also makes sense for them to see what others have discovered, to see why standard algorithms have become preferred over the centuries, and to appreciate how they might be equivalent to what the student has devised for herself. This would seem to be a very basic form of connection to make, and would enable the student to map her understanding to the notions used by the rest of the mathematical world. It also is vitally important to ensure that the discovery process leads each student to an algorithm that is valid in general application; anything less will invite serious misconceptions. On that note, it certainly does not make sense for students who are discovering mathematics to accept calculator answers as external authority. If multiple approaches are to be accepted, the students must be equipped to test them meaningfully (and without resort to the mysterious and unknown workings inside a calculator).

Milgram notes that in a similar vein, precise definitions are never given. The behavior of exponents, and the familiar rules they follow is not touched upon. Ideas of proof are not foreshadowed; instead, students are encourage to accept a large number of trials as a surrogate, which is mathematically dangerous in the extreme.

[8]Prof. Milgram also includes insights into the use of CMP in Palo Alto, and purported failure of the teachers to apprehend what was to be discovered in several of the investigations.

In sum, critical matters have been left out. Plainly, something had to be left out to implement a less is more strategy. The problem is that the wrong material was chosen at the initial stages of program design.

V. Conclusion

CMP is not without merit. Some of the projects and investigations could be useful tools for gaining and holding student engagement for selected topics. It is not, however, a suitable stand-alone curriculum to prepare students for high school math. The content choices made during program design simply were not appropriate to that task. Unless and until the high school curriculum is re-designed to remedy the deficiencies left by CMP, it would be a disservice to our students to select CMP as the program to use.

The nature of the program, and the fact that many teachers do not complete several units each year, suggests that supplementation of CMP to address the deficits directly would be extremely impractical. Although not designed with my suggestion in mind, it seems far more practical to draw upon CMP as a source for supplementation and enrichment of our existing curriculum.