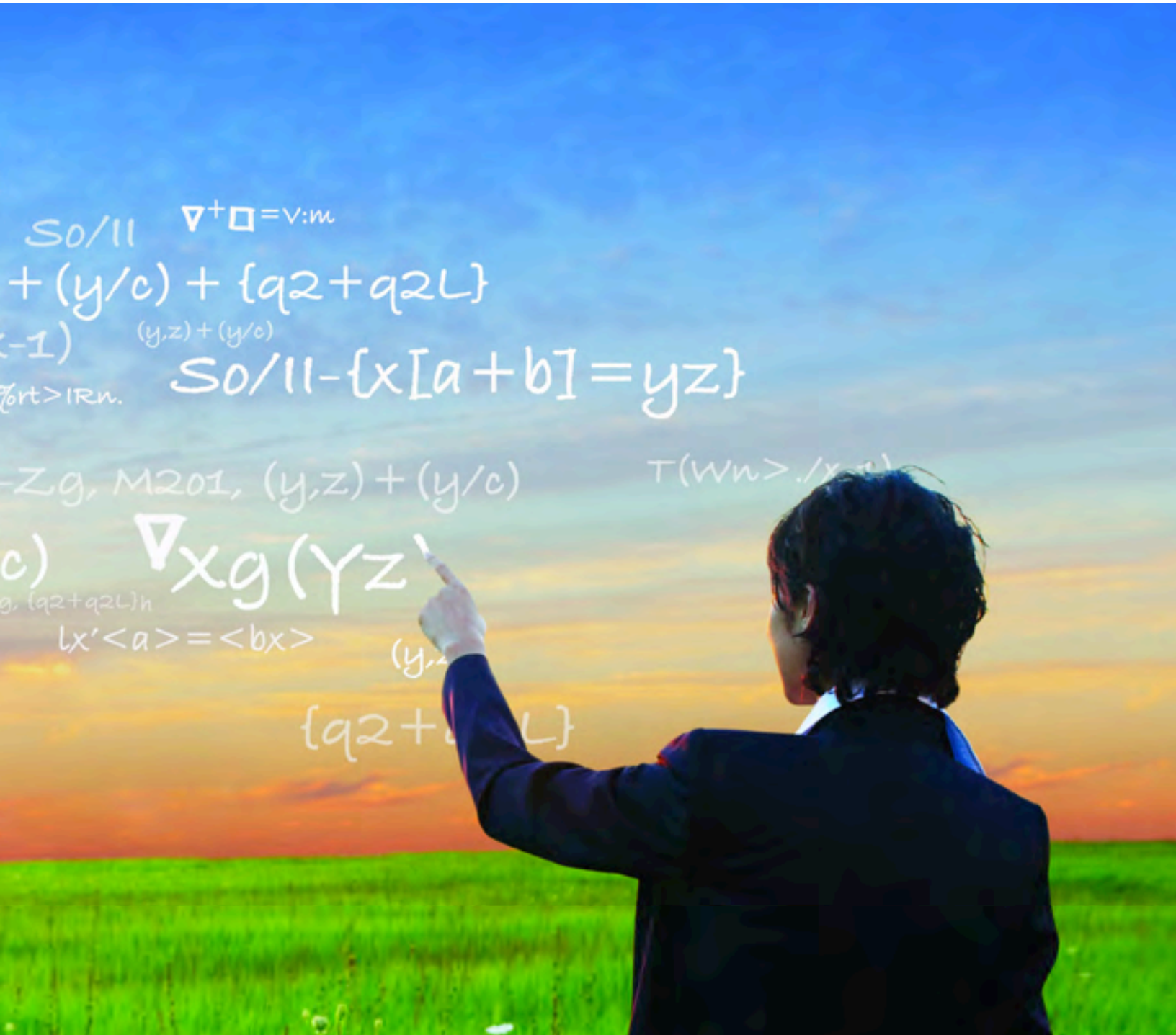
Taking Successful Programs to Scale

AND CREATING LASTING RESULTS



About the National Math and Science Initiative

NMSI is a non-profit organization that was launched in 2007 by top leaders in business, education and science to actively promote solutions to the math and science crisis in America. NMSI's mission is to replicate programs with proven results on national scale in order to have a positive impact on America's 50 million student public school system. In its first year, NMSI has:

+ Awarded grants to six states to replicate the successful Advanced Placement Training and Incentive Program, which greatly increases the number of students succeeding in more rigorous math and science coursework. In fall 2008, enrollments were up more than 70 percent in Advanced Placement math, science, and English courses in the states that received grants from NMSI.

+ Awarded grants to 13 universities to replicate the successful UTeach program, which encourages math and science majors to enter the teaching profession. As a result, in fall 2008, more than 1,000 students around the country were enrolled in UTeach programs, creating a new wave of math and science teachers for our country.

NMSI is marshalling public-private cooperation around the country thanks to initial funding from Exxon Mobil Corp., the Bill and Melinda Gates Foundation, and the Michael and Susan Dell Foundation, with generous in-kind assistance from IBM and Perot Systems.

Forward

Far too often in the United States, our approach to educational problems has been to start pilot program after pilot program. While that unleashes a lot of bright ideas, it does not lead to sustained results. Another way of putting it is, we've lighted a least a million pilots in this country, but we haven't ignited the central heating system.

Today's challenges require a new kind of philanthropy – a much more entrepreneurial philanthropy – that produces measurable results. Today's leaders in the private sector want to see hard metrics that show programs are working. Today's investors want to know that programs have sustainability and won't disappear when the calendar changes.

We believe the National Math and Science Initiative is establishing the kind of 21st Century paradigm for public-private partnership that has been needed. NMSI is expanding programs with proven, quantifiable records of success and marshalling the funding that is essential to incubate that success across the country. In effect, NMSI serves as a holding company, providing not just financial support, but on-going expertise to ensure that grantees grow strong enough to stand on their own footing.

We believe that "funding to scale" provides the clarity and common sense that many philanthropists and business leaders have been seeking. Funding to scale helps ensure that their contributions will leave a lasting legacy. This paper is designed to explain how that model of philanthropy works. I hope you will agree that making good programs more accessible to more people is the approach our country needs to move forward.

Tom Luce

CEO

National Math and Science Initiative

Table of Contents

What Is Scaling Effective Programs?

Scaling Effective Programs is a category of giving that is quite unique. Philanthropists have many different interests that guide their giving, but Scaling Effective Programs offers an approach that can produce lasting transformation.

This guide speaks to funders who:

+ view their giving as venture capital that stimulates other giving
+ want to support a program for a limited time, rather than an open-ended commitment
+ want their giving to have significant and lasting effects that can be measured

Scaling Effective Programs is based on the principle that a limited period of investment giving can be structured successfully to create the greatest chance of having programs spread to more locations and be sustained long after the initial investment. This approach allows funders to move on to supporting other programs, or support the same program in new locations without being indefinitely tied to supporting a local implementation. Scaling Effective Programs incorporates planned withdrawal of support and program self sufficiency, which avoids abruptly "abandoning" a project.

Scaling Effective Programs is also based on the belief that public services such as education should be funded primarily by public funds, but that public/private partnerships can create the impetus to maximize effective programs. If done correctly, this type of partnership can point the way to large-scale adoption and institutionalization.

Did you know there is a process for producing lasting impact?

There is a certain science to this type of giving. The purpose of this guide is to describe the model for those who desire a lasting effect for their investment. The model itself is not complicated, but it requires a level of focus and discipline not always found in the philanthropic world. As so aptly said by Tom Luce, CEO of the National Math and Science Initiative, "You can choose to be one of a thousand pilot lights, or you can choose to light the furnace."

If you want to spark meaningful change in an arena that is important to you, this guide is a must-read.

The Basic Model

The National Math and Science Initiative (NMSI) is currently using this funding model. NMSI's mission is to take proven, research-based programs in math and science education and successfully demonstrate that they can be replicated on a national scale, state by state, university by university. NMSI has raised private funds to initiate replication of two proven programs and is currently supporting programs in 14 states.

The model has the following essential elements:

+ Selecting programs already proven to be successful with documented results
+ Identifying the key components that make the program work, which can then be replicated
+ Settling the question of cost and cost-effectiveness
+ Selecting the right entity to manage and implement the program
+ Instituting performance management and rigorous program monitoring
+ Establishing simple and effective collection of evaluation data
+ Building partnerships and advocacy
+ Communicating success

Selecting Proven Programs

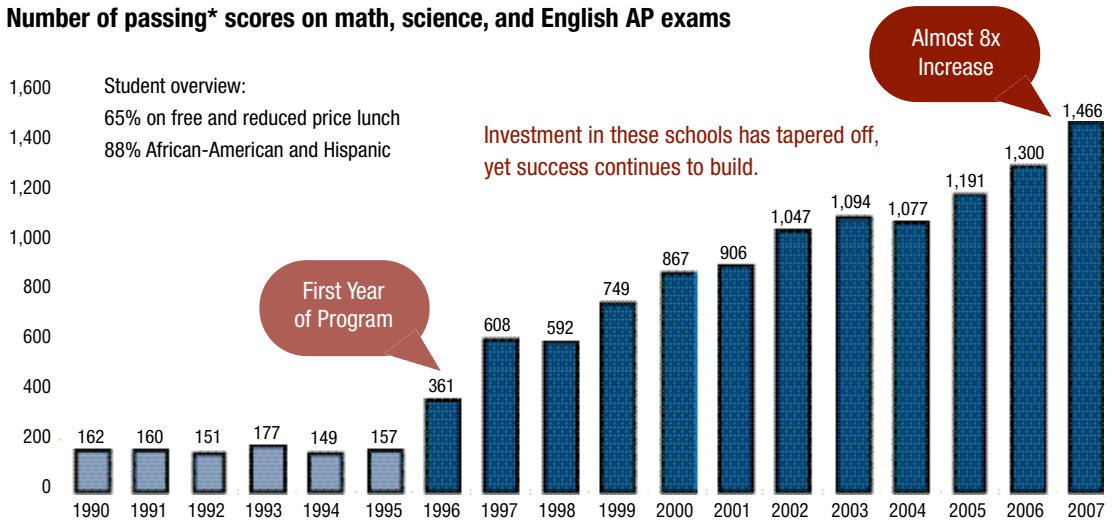
A critical first step is to select programs that are good candidates for replication. Funding pilots is an important endeavor, producing innovative ideas and creating knowledge. Pilot programs must precede the Scaling Effective Programs effort. They are necessary to determine program effectiveness through measurable results.

What do you look for in selecting a program to replicate? There are several key characteristics necessary for successful replication, as follows:

+ **At least five years of measurable success.** Many programs can produce initial results, but do not lead to continued improvement. Furthermore, far too many programs have inadequate evaluation designs. The gold standard is the randomized control evaluation. Very few programs meet this rigorous standard because implementing programs in schools normally does not lend itself to the use of randomized control groups.
+ **Evaluation results based on objective measures such as standardized test results, increased graduation rates, increased student acceptance into higher education etc.** They should not be based on satisfaction surveys, anecdotal observations, or other "soft" evidence.
+ **Evaluation results that are easily understood and show "significant" and "sustained" improvement.** Results with "statistical significance" often pass muster in technical evaluations, but may often be too small to pass the "practical significance" test. Practical significance means that the results are so pronounced that the average person can easily grasp the impact. The chart that follows shows significant increases in the number of Advanced Placement passing exams produced by the Advanced Placement Training and Incentive Program in Texas. Notice that the improvement not only is marked, but it also continues to increase each subsequent year. Such results clearly pass the practical significance test.

"Cool" pilot programs may not be the most effective ones.

Advanced Placement Passing Scores Continue to Improve at the Original 10 Dallas Schools.



Identifying the Essential Elements of Success

There are many reasons why a program may produce successful results. Some are simple to identify, such as having a dynamic leader who motivates people to perform at very high rates. Some may result from a convergence of events – support from a citizens' education reform movement, a sweeping legislative initiative – that produce the right environment for change.

For a program to be taken to scale and then sustained, there must be a common core of factors that can be pinpointed as the indispensable levers that produce the significant results. Without having this list of essential elements, a program is not a good candidate for Scaling Effective Programs.

Once identified, these success factors provide a core program that must be preserved in any replication plan. There may be allowable variations that make a successful program better suited for different environments, but the essential elements must be maintained – or you lose valuable benchmarks to determine faithful replication.

The indispensable core components of a program can be identified by experts who have experience analyzing and evaluating performance. An important part of the program selection process is to ensure the program staff or advocates can explain the essential elements leading to success and articulate why they are truly essential by relating them to the performance data. Identifying the core factors of success is tantamount to describ-

How do you determine if certain components of a program are necessary to its overall success?

ing the architectural framework of the program to be implemented. Putting those features in place also will provide the "milestones" to measure for successful replications. Marking those milestones provides a critical path for new adopters to follow, along with the partners and gatekeepers who will be needed to sustain the program.

Settling the Question of Cost and Cost-Effectiveness

Some programs are simply too expensive to be good candidates for replication and scaling. Whether or not the cost is acceptable is a value judgment. Such a judgment relates to the demonstrated impact of the program and to the priorities of the eventual public or private funding entity. The funding structure is also important. For example, if a program is based on a continuing public/private partnership at the local level, the tolerance for cost may be higher. If the program requires mostly public dollars, those costs must be considered in light of competing education-related costs.

There are at least five ways to look at the cost of implementing programs. These are:

+ Total lump sum one-time investment
+ Total recurring investment
+ Cost in comparison to other public programs that provide basic services
+ Per participant or student cost
+ Considering the value added from the program compared to the value added by other programs

Expensive programs may produce good results, but may not be sustainable by private or public entities.

All five must be analyzed when the time comes to scale up a program in the public arena. Costs may be covered in different ways: such as redistributing resources, generating a dedicated funding source, and requiring matching funds for public entities who want to implement the programs. Start-up costs are almost always greater than continuation costs. Each should be examined.

One rule of thumb is to determine the percent of the total per student cost of any candidate program. If the per student cost is less than 10 percent of the total per student cost in the public education system, then the program is within reach, especially if the program is designed to reach a certain student population rather than all students.

Per student funding analysis is important if a school district or state is to eventually adopt the program. Such adoption must not be too expensive for a school district to sustain. Any proposed increases in per student funding competes with the general fund, which supports teacher raises and other fixed costs. Programs designed for smaller subsets of students can tolerate greater per student costs than programs for the entire population.

Analyzing the value added from a program compared to the value added by other

programs is another way to determine cost effectiveness. There are several programs that are intended to produce more engineering majors.

Consider the following two examples:

+ Program 1 has had 4,000 students, of which 2,000 went on to major in engineering. The total annual cost of this program is $4,000,000.
+ Program 2 has had 2,000 students, of which 500 went on to major in engineering. The total annual cost of this program is $100,000.

When considering the data above, it would appear that program 1 is better, as it has more students in the program and a greater percentage of students who go on to become engineers. However, program 1 has a cost of $1,000 per student ($2,000 if you just count the ones who go on to major in engineering). Program 2's cost is $50 per student ($200 if you just count the ones who go on to major in engineering.)

Therefore, while program 1 appears to be more productive, it's not likely to be a candidate due to its high cost in comparison to program 2. And program 2 is not likely to be a candidate due to it not being as productive as program 1.

Discussions with the candidate program operators regarding perceived cost effectiveness of the program and issues regarding wider adoption (such as economics of scale) will help funders work through this step. Failing to exercise due diligence on the current and anticipated costs may result in loss of investment in terms of scaling a program and the loss of the program once funding is discontinued.

Selecting the Right Entity to Manage Replication

Another critical consideration in this process is selecting the right entity to fund. To be successful, a grantee should have the capacity to:

+ Manage the program selected for scale-up
+ Keep program replication of essentials as a priority
+ Provide expert support needed to successfully replicate
+ Attract partners and influence policymakers to produce scale-up resources
+ Understand and establish an accountability system for meeting benchmarks and timelines

Strong management is the key to the success of any complex endeavor.

The National Math and Science Initiative has chosen to fund education not-for-profit entities in selected states to replicate an AP Training and Incentive Program that significantly increases student enrollment and success in Advanced Placement math and science courses. For the UTeach Program, which prepares content majors to become secondary teachers, we have funded universities with large numbers of math and science-related majors.

Sometimes large government agencies have too many programs, priorities, restrictions and rules to be good candidates to manage program scale-up. However, they can certainly be indispensible partners in a competitive process.

It is always best to select the grantee using a competitive grant selection process. In doing so, the funder can evaluate fully the critical capacity issues of all applicants. Important components of the grantee selection process include:

+ Experience in the relevant field
+ Excellent leadership
+ Program management capacity
+ Commitment to the mission
+ Ability to expand to serve new sites in subsequent years
+ Ability to convene influential government and private parties.

An entity responsible for replication also should have the ability to contract for expert assistance in the essential elements of success. These elements may include professional development, setting high standards, observing and providing feedback to teachers, identifying and providing interventions to correct problems, etc. An entity should be judged by matching its capacity with the need for successful scale-up. Many programs have failed due to lack of ongoing support and quality control during initial implementation.

The RFP process can be designed to determine the capacity of competing applicants. Entities that lack any of the required resources or capabilities increase the risk of failure. Candidates with no track record or entities that are totally dependent on the grant are risky partners. Regardless of the grantee chosen, the funder should lay out the plan of action, funding allocations, performance standards, and all other expectations. Success requires a partnership between funder and grantee that is built on good communication, trust, and joint problem solving. The funder has an intense interest in success that should be shared by the grantee partner.

The Scaling Effective Programs Business Model

For a program to be taken to scale, there must be demonstration of local support for implementation. Projects totally funded by one source often disappear once the funding period has expired. Requiring some level of matching funds is a good way to secure this local commitment. There is no rule as to the level of match most appropriate. However, anything under 25 percent may be too small of a commitment.

Why do so many worthy pilot programs disappear when the funding runs out?

In addition to a match, funding should be based on performance. Setting clear performance benchmarks is an incredibly

useful management tool for grantees. If periodic release of funds is tied to benchmarks, then their attainment becomes priority one. These benchmarks should be those demonstrating implementation of the essential program elements. Some benchmarks, if missed, may jeopardize the success of a program. For example, one benchmark for the NMSI AP Training and Incentive Program is to have students register for fall AP courses in the spring. If this benchmark is missed, there will be no program expansion in the fall and a full year will be lost. Managing critical benchmarks like this one is the key to keeping implementation on track.

Programs should be allowed to start on a smaller scale, expanding as they become more proficient. A funder's financial commitment to the scale-up program will determine the level and timing of increased funding as well as the gradual withdrawal of funding as the program begins to go to scale. NMSI uses a model of three years of gradually increased funding followed by a three-year phase-down as the replication site moves to self-sufficiency with local funds and other resources. The model used by NMSI calls for a 75, 50, and 25 percent level of funding over a three-year period.

Gradually increasing funding allows grantees to get on solid footing with a manageable set of sites before expanding to other sites. It also allows them time to collect performance data, which is critical to advocating scale up. The phase-out period gives grantees time to add donors, as well as acquire public funding to institutionalize the program. Chances for state or school district adoption are heightened if the required investment is smaller and grow as more success is demonstrated.

Monitoring for Success

Don't wait until it is too late to turn around a program or pull out.

Regular program monitoring is not unique to this type of funding model. It is a necessary part of any investment. Funders should receive regular progress reports and conduct site visits and financial audits to ensure fidelity. If a funder does not have the in-house expertise to directly monitor program implementation, a well-selected grantee or third party may fulfill this role. To the degree possible, all progress reports should contain objective data linked to the completion of performance benchmarks.

Some forms of program monitoring can become overly burdensome on the grantee, taking attention away from implementation activities. Using a negotiated monitoring plan based on efficiency and common sense is the best approach. It is critical to identify early warning signals on those activities that the success of the program depends on.

Strategies for Scaling a Program

If a funder strongly believes in a program, why not set a goal of widespread adoption? Accomplishing large-scale adoption includes some variables that are beyond control. Timing for

reform is critical – local constituencies must be ready for change. The state of the economy is critical. The political goals of governors and other elected officials are important. All of these have relevance and must be taken into consideration in identifying the right time for advocacy.

Gaining widespread acceptance of a program is no accident.

A strong communication plan that demonstrates success with hard data and personal stories is an absolute must. The development of such a plan should be included in the benchmarks and should have resources dedicated to it.

Advocacy, as used here, means ensuring that those in decision-making positions hear about the program, see it in action, receive periodic updates, receive performance reports and even serve in partnership roles. Advocacy means taking the time to work on scenarios demonstrating the benefits of large-scale adoption.

There is no substitute for strong, influential partners. Partners who serve as grantee board members, as donors, mentors, or in other capacities, can be effective advocates within their circles. Having advocates who are not paid by the program and who may be personally contributing to the program carry greater weight than program staff.

Program Evaluation

Taking a program to scale is impossible without reliable clear evaluation data. Most funders require some form of evaluation. Evaluation standards should be similar to those used in selecting any program to fund. The goal of the program evaluation here is to demonstrate successful replication for potential scale up.

A complex evaluation system with too many variables, or too complex of a data analysis, may place an unnecessary burden on the grantee and, more importantly, the implementation sites. The primary focus of all involved must be on successful replication.

At the same time, it is essential to have processes in place to collect reasonable objective data on performance. The goals of the program should determine the primary evaluation questions and the evaluation system should be tied to the essential elements of success. During the early stages of implementation, outcome data will not be available. However, measuring the attainment of benchmarks will be the basis of ongoing progress reports and should include objective indices as much as possible. For example, in the case of the AP program, the reporting of the completion of student registration for AP courses would include the number of students, demographics and types of courses disaggregated by school will provide a robust progress report for donors. All results should be objective, easy to understand and communicated through charts and graphs with plain language text. Reportable program results are essential for producing a sustained program.

Summary

Planning for an investment to have lasting impact takes time and resources. But doing so is a good way to protect an investment from going the way of too many projects. Philanthropists, foundations and corporate donors have an intense desire to make the world a better place by sharing their hard-earned resources. The public sector and many people who struggle to make their way in life depend on this generosity. That's why investing in programs with proven ability to make things better and the capacity to be replicated to reach more people, is a worthy goal.

The National Math and Science Initiative is proving these principles right now by banking on proven programs – within one year, NMSI has expanded AP Training and Incentive Programs to 67 schools around the country. This has made possible the enrollment of 13,000 more American students in more rigorous AP math and science classes, which will help them succeed in college and in their careers. At the same time, NMSI has expanded the UTeach program for training math and science teachers to 13 American universities. That means that 500 more students will pursue math and science teaching careers in fall 2008, providing a desperately needed infusion of teachers with content knowledge and certification.

This is tangible, significant progress. It is made possible by scaling effective programs and taking the best education approaches to more American students. With greater support from the public and private sector, it is a model that could trigger positive results around the country.

> At the end of the day there are three things that matter most: results, results, results!

National Math and Science Initiative • 325 N. Saint Paul, Suite 2900 • Dallas, Texas 75201
214-665-2500 • 214-665-2525 Fax • www.nationalmathandscience.org