

**COMPREHENSIVE SCHOOL MATHEMATICS PROGRAM  
DEVELOPER/DEMONSTRATOR PROJECT**

Final Performance Report  
Grant Period  
November 1, 1992 - October 31, 1994

Grant Number R073A20019

Submitted by  
Mid-continent Regional Educational Laboratory

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# FINAL PERFORMANCE REPORT

## 1. Progress toward meeting objectives

The goals and operational objectives of the CSMP Developer/Demonstrator Project were:

- Goal 1: To increase the number and types of schools providing a complete, unified mathematics program with instruction in problem solving, applications, and higher-order thinking skills through the adoption of the CSMP curriculum.
- Objective 1.1: During each of the next four years to secure CSMP adoptions in an average of five states and territories where CSMP has not previously been installed or has no demonstration site.
- Objective 1.2: During each of the next four years to certify an average of five demonstration CSMP sites in new states and territories.
- Objective 1.3: Among new adoptions each year to secure diverse sites including public and non-public schools in urban and rural settings.
- Goal 2: To significantly improve elementary grade students' test scores in problem solving, applications, and higher-order thinking skills through the adoption of the CSMP curriculum.
- Objective 2.1: At each of four adoptions selected for their representativeness and for their projected fidelity, CSMP students will perform significantly better on the MANS Tests<sup>†</sup> than comparable non-CSMP students.
- Goal 3: To increase the opportunity for elementary teachers to improve their skills in problem solving, applications, and higher-order thinking skills through CSMP training workshops.
- Objective 3.1: Directly or indirectly (through certified trainers or local CSMP coordinators), to train all participating teachers in every new CSMP adoption.
- Goal 4: Over a four-year period to assure the continued achievement of goals 1-3 beyond the grant period and to improve the cost efficiency of CSMP adoptions by decentralizing and institutionalizing CSMP's dissemination among independent certified trainers operating in conjunction with the CSMP Network of local coordinators from adoption sites.
- Objective 4.1: During each of the next four years, to certify an average of three new trainers.

Individual progress reports by objective follow:

### Objective 1.1

CSMP is now being implemented in 42 states. This represents three new states (Idaho, Montana, and South Dakota). Teacher training has taken place in Oklahoma, Nebraska, Nevada, and North Dakota but we do not currently list sites in those states.

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<sup>†</sup>The MANS (Mathematics Applied to Novel Situation) Tests are a series of text scales designed to assess some of the underlying thinking skills of the CSMP curriculum.

### Objective 1.2

There are currently 43 CSMP demonstration sites in 22 states. This list includes seven rural and seven urban settings, ten non-public schools, and nine sites with CSMP in use for special populations.

### Objective 1.3

The total number of new sites (ESPs) added since our last report is 119. Of these 55 are rural adoptions and 15 are urban (big city) adoptions. Among new adoptions the diverse sites include 16 non-public schools. At another 130 sites we report some expansion either to new grade levels or new school buildings.

### Objective 2.1

MANS Tests were administered at five adopting sites, four with K-6 usage of CSMP and one site with only K-4 usage. One of these sites is a gifted CSMP implementation and several have CSMP in use with special education classes. Two of these sites have results from MANS testing over a six to ten year period.

CSMP students performed significantly better than non-CSMP students in Manhasset, New York (suburban), in Guilderland, New York (suburban), in Hillsborough Township, New Jersey (rural, small city), in Montgomery County, Virginia (rural, small city), and in St. Joseph, Michigan (medium city). Earlier studies similar to these were used in our successful submission to the Program Effectiveness Panel, April 1992.

The data illustrated in the following graphs (see pages 3-7) have each class shown according to an average vocabulary score (horizontal axis) and average total MANS score (vertical axis). The line drawn through a graph is the regression line of total MANS on vocabulary; i.e., it represents the best linear prediction of total MANS for a given vocabulary score. Hence, classes represented above this line have higher scores than would be predicted from their vocabulary scores; classes below the line have lower scores. Summaries are given for studies where we have been testing for many years.

### Objective 3.1

CSMP workshops for teachers are designed so that teachers wrestle with the same problems their students will face, experience a pedagogy of problem situations, and observe with a role model good strategies for teaching problem solving and higher-order thinking skills. CSMP teachers learn to be better problem solvers themselves, to recognize superior problem solving in students, and to teach problem solving.

CSMP staff conducted one-week training workshops in 28 locations from November 1992 to October 1994.

CSMP certified trainers conducted another 30 CSMP training workshops in other locations.

In addition, all CSMP local coordinators conduct on-site training in their own school districts for new teachers or for expansion of the program within their districts. Some of these local coordinators invite neighboring districts to participate in their training sessions or go to neighboring districts to give CSMP workshops. Also, local coordinators often use in-service days to extend the experience of veteran teachers in problem-solving techniques using CSMP materials.

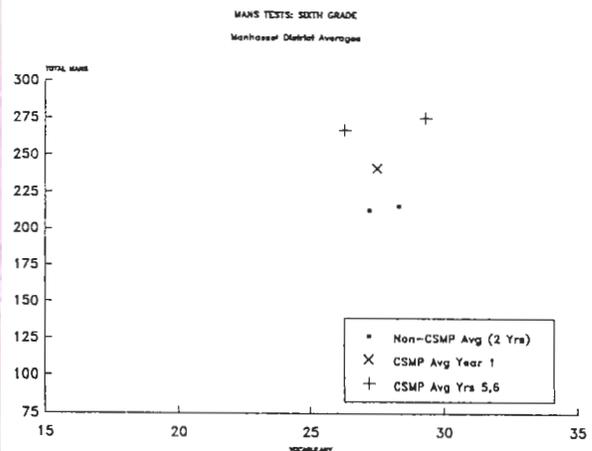
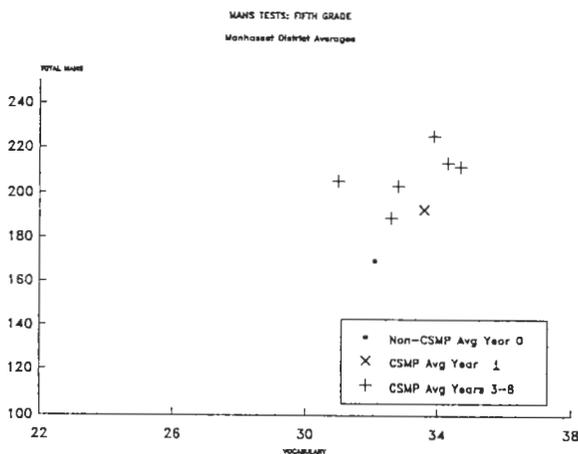
## MANHASSET CENTRAL SCHOOL DISTRICT SUMMARY

The Manhasset Central School District began using the CSMP curriculum at the earliest grades in 1981-82. Over a six year period the full grades K-6 curriculum was implemented district-wide and continues to be so. In 1985 the MANS Tests were administered to all classes in grades 5 and 6; these classes were using the previous (non-CSMP) curriculum. Sixth grade non-CSMP classes were also tested in 1986. During the next six years the tests were administered to CSMP classes at various grade levels according to district needs. The main results of the MANS testing are as follows:

1. CSMP classes, grades 5 and 6, in their first year of implementation of the curriculum had significantly higher Total MANS scores than previous non-CSMP classes at the corresponding grade levels. Their scores on the various individual MANS categories were also higher and the difference was significant on 15 of the 18 categories (nine at each grade).
2. CSMP grades 5-6 MANS scores increased still more beyond those of the initial implementation as teachers became more familiar with the CSMP curriculum. They have continued at these high levels in the intervening years.
3. Manhasset average MANS scores are above the level achieved by most CSMP classes of comparable ability in other school districts.

**Table 1**  
**CSMP History in Manhasset**

Grade	Year						
	81-82	83	84	85	86	87	88-95
1	CSMP	CSMP	CSMP	CSMP	CSMP	CSMP	CSMP
2	Non-CSMP	CSMP	CSMP	CSMP	CSMP	CSMP	CSMP
3	Non-CSMP	Non-CSMP	CSMP	CSMP	CSMP	CSMP	CSMP
4	Non-CSMP	Non-CSMP	Non-CSMP	CSMP	CSMP	CSMP	CSMP
5	Non-CSMP	Non-CSMP	Non-CSMP	Non-CSMP	CSMP	CSMP	CSMP
6	Non-CSMP	Non-CSMP	Non-CSMP	Non-CSMP	Non-CSMP	CSMP	CSMP

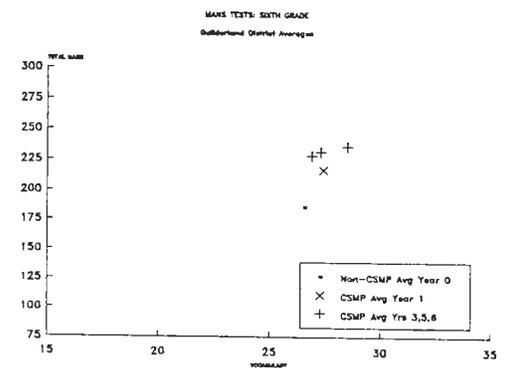
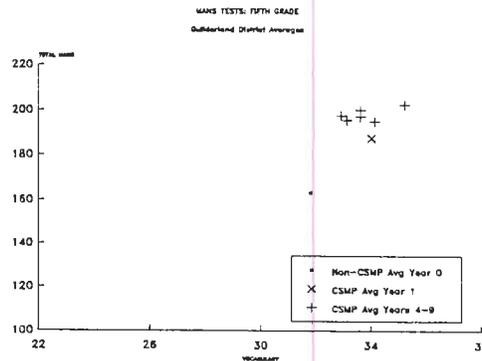
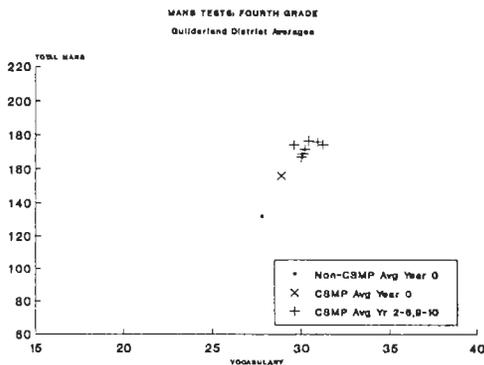


## GUILDERLAND CENTRAL SCHOOL DISTRICT SUMMARY

### Major Results of MANS Testing

The Guilderland Central School District began using the CSMP curriculum at the earliest grades in 1978–79. Over a six year period the full grades K–6 curriculum was implemented district-wide and continues to be so. In 1982 the MANS Tests were administered to approximately half of the classes in grades 4–6; these classes were using the previous (non-CSMP) curriculum. During the next 10 years the tests were administered to CSMP classes at various grade levels according to district needs. The main results of the MANS testing are as follows:

1. CSMP classes, grades 4–6, in the early stages of implementation of the curriculum had significantly higher Total MANS scores than the previous non-CSMP classes at the corresponding grade levels. Their scores on the individual MANS categories were almost universally higher, significantly so at all grade levels in Mental Arithmetic and Number Patterns and Relationships, and at one or two grade levels in the other core MANS categories.
2. CSMP grades 4–6 MANS scores increased still more beyond those of the initial implementation as teachers became more familiar with the CSMP curriculum. They have continued at these high levels in the intervening years.
3. Guilderland’s average MANS scores are at or above the level achieved by most CSMP classes of comparable ability in other school districts.



### Teacher Reactions to CSMP

Teachers were asked to rate CSMP, compared to the math program they had previously used, on a number of criteria. Overall, CSMP was rated very highly by Guilderland teachers, particularly (at least 4.3 on a 5-point scale) on overall quality, student interest and involvement, student ability to do logical reasoning, student achievement of math concepts, and appropriateness for high ability students.

In an open ended question, teachers were asked to give their overall evaluation of CSMP. Of the 37 teachers responding to this item:

70% gave only positive comments—“excellent,” “super,” “wonderful,” “enjoy it,” “very good,” “fun to teach,” “strong program,” “outstanding.”

16% gave positive comments but added some caveat, for example, “I like it very much but add much to it for ease of understanding,” “very good except for computation.”

14% gave equally positive and negative comments (or neutral) for example, “OK, not great.”

## SUMMARY

In the spring of 1994, the MANS Tests were administered to all students in grades 2 and 4-6 in the Guilderland Central School District. Results were compared with those obtained in previous administrations of the test in 1990 or 1992 (depending on grade level.)

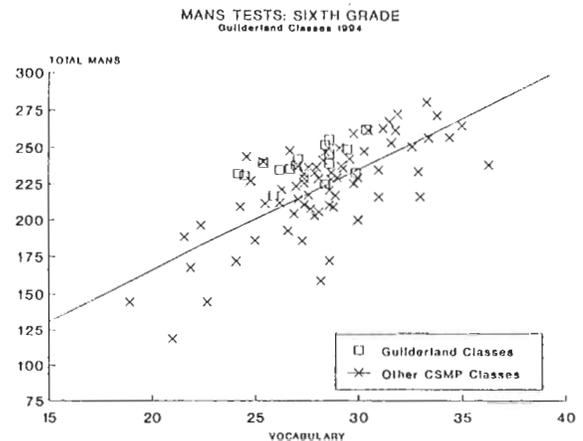
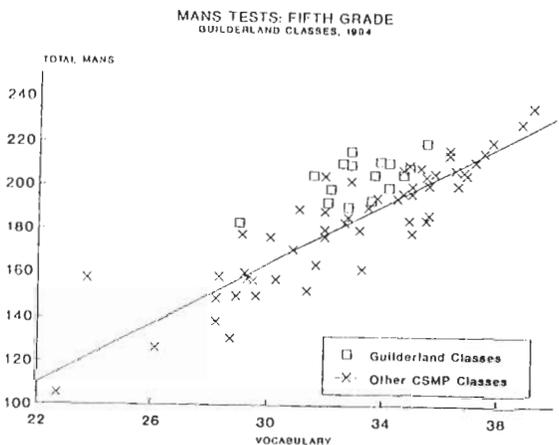
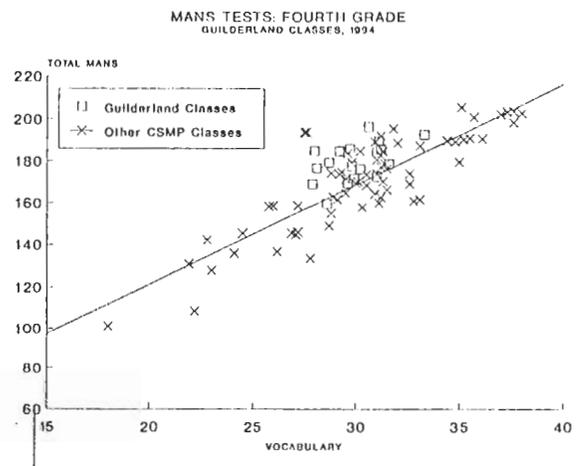
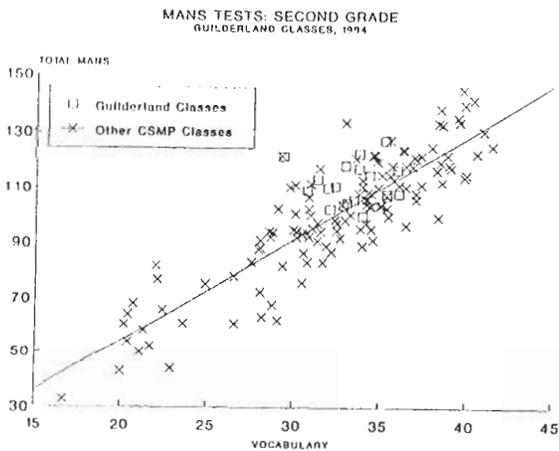
At all grade levels, the 1994 classes had slightly higher score on almost all MANS categories and the differences were significant at the .05 level in five of these comparisons. The 1994 classes had higher scores on Total MANS, although the differences were significant only in the .05-.02 range.

In addition, graphical data showed clearly that the MANS scores for the 1994 Guilderland classes compared favorably with scores from CSMP classes.

Thus, after several years of CSMP usage, Guilderland Schools have been able to maintain and even improve their excellence performance on the MANS Tests.

**Table 1**  
**CSMP History in Guilderland**

Grade	Year						
	78-79	80	81	82	83	84	85-95
1	half-CSMP	CSMP	CSMP	CSMP	CSMP	CSMP	CSMP
2	Non-CSMP	half-CSMP	CSMP	CSMP	CSMP	CSMP	CSMP
3	Non-CSMP	Non-CSMP	half-CSMP	CSMP	CSMP	CSMP	CSMP
4	Non-CSMP	Non-CSMP	Non-CSMP	half-CSMP	CSMP	CSMP	CSMP
5	Non-CSMP	Non-CSMP	Non-CSMP	Non-CSMP	half-CSMP	CSMP	CSMP
6	Non-CSMP	Non-CSMP	Non-CSMP	Non-CSMP	Non-CSMP	half-CSMP	CSMP



## HILLSBOROUGH TOWNSHIP SCHOOL DISTRICT SUMMARY

During the 1990-91 school year, the CSMP curriculum was used in 13 of the 18 second grade classes in the Hillsborough Township, New Jersey, Public Schools. The remaining schools used the regular (previous) district mathematics curriculum. The following year, schools in which CSMP had been used continue to use it in third grade; schools in which the non-CSMP curriculum had been used continue with that curriculum in 1992.

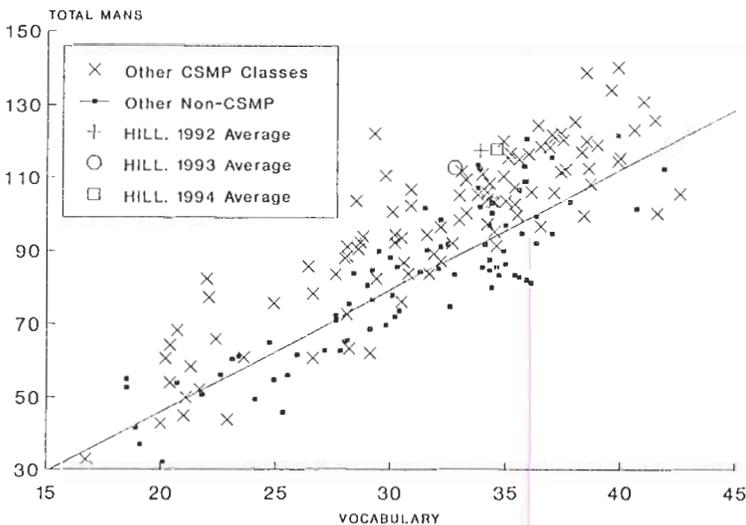
In the spring of 1991 the second grade MANS Test were administered to all second grade classes and comparisons made between CSMP classes and non-CSMP classes. In the spring of 1992 the third grade MANS Tests were administered to all third grade classes and, again, comparisons made between CSMP and non-CSMP classes.

Statistical comparisons of MANS Test results between CSMP and non-CSMP classes were carried out at each grade level using an Analysis of Covariance procedure, with Vocabulary score used as covariate.

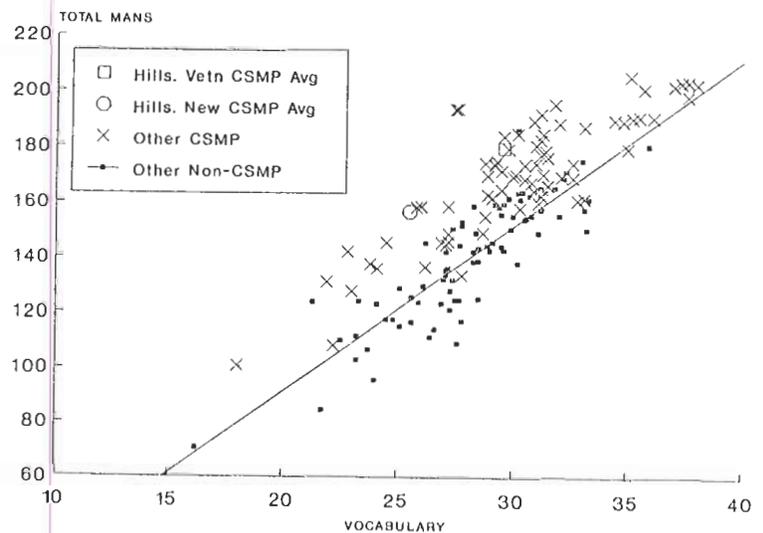
At both grades, CSMP classes had significantly higher scores ( $p < .01$ ) on Total MANS. They also had significantly higher scores ( $p < .05$ ) on six of the seven MANS categories in second grade and five of the seven in third grade.

In addition, second grade MANS Tests were re-administered in 1992 to all second grade classes. Schools which had used the non-CSMP curriculum in 1991 used the CSMP curriculum in 1992 and the MANS scores of this subgroup rose dramatically with the introduction of CSMP. In the remaining schools, who were using CSMP again, scores rose very slightly, indicating some improvement with increased teacher experience with CSMP.

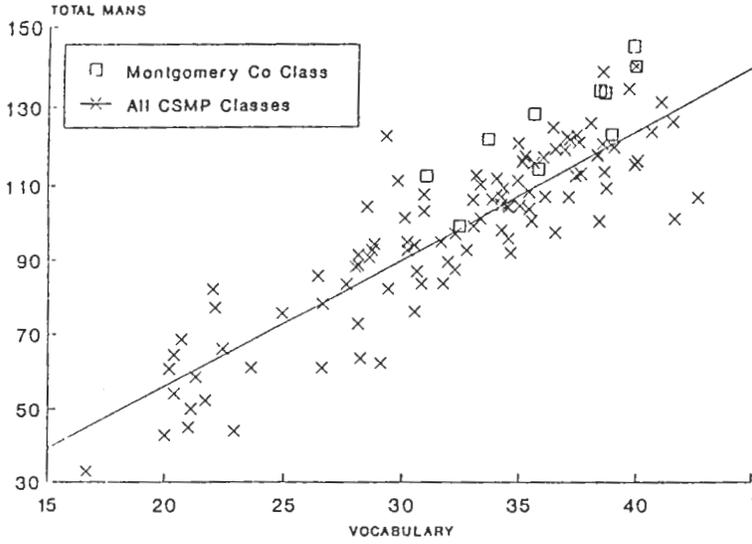
MANS TESTS: SECOND GRADE  
HILLSBOROUGH 1992-4 versus other classes



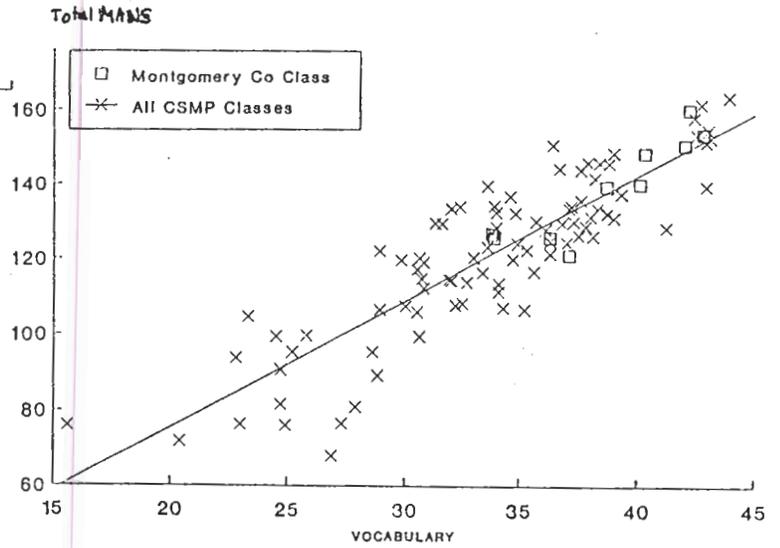
MANS TESTS: FOURTH GRADE  
HILLSBOROUGH VERSUS OTHER CLASSES



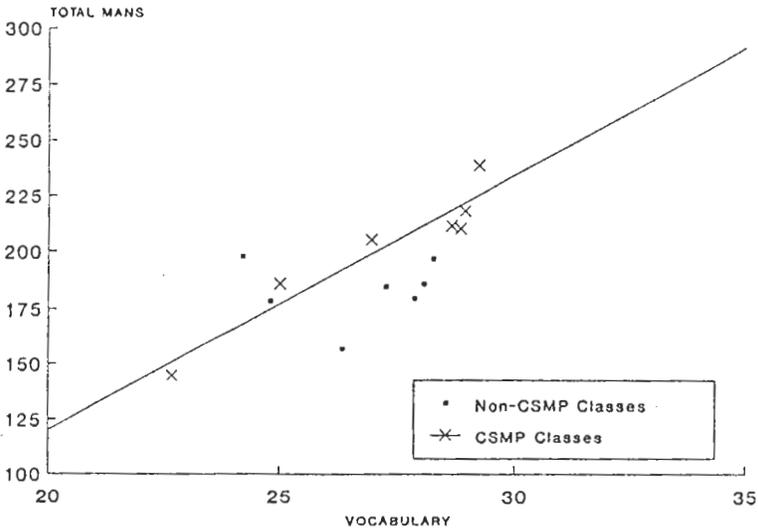
**MANS TESTS: SECOND GRADE**  
Montgomery County Classes



**MANS TESTS: THIRD GRADE**  
Montgomery County Schools



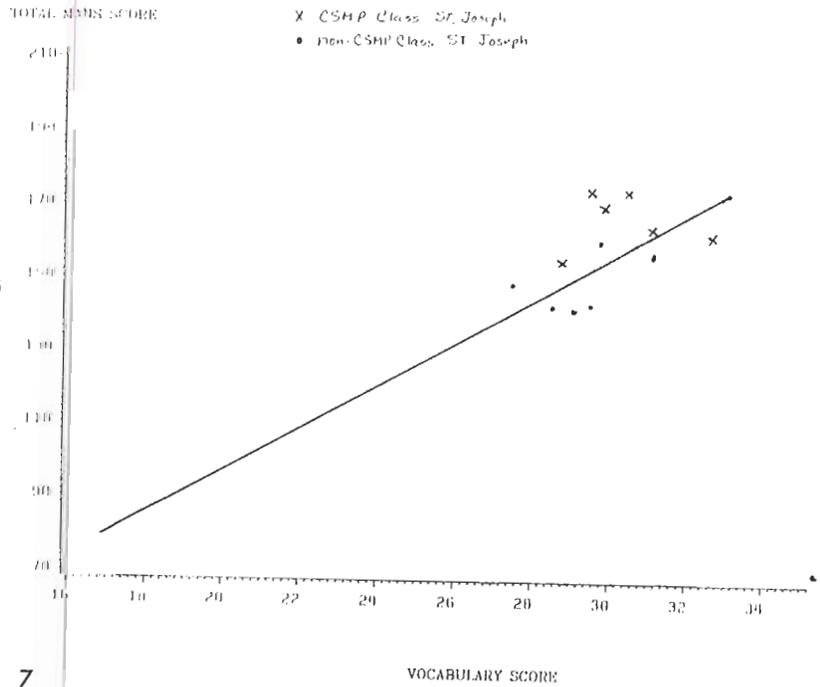
**MANS TESTS: SIXTH GRADE**  
ST. JOSEPH PUBLIC SCHOOLS



**MANS TESTS: Fourth Grade Class Means**

Total MANS Score Plotted Against Vocabulary Score

- x CSMP Class, St. Joseph
- non-CSMP Class, St. Joseph



## Objective 4.1

In June 1993, CSMP staff and certified trainers conducted two week-long training institutes in Lexington and in Anderson, South Carolina for teachers from many districts throughout South Carolina. In each session there were several individuals working on becoming certified trainers. Between July 1993 and August 1994, CSMP certified trainer, Lois Ball, worked with five of these people to give training workshops in Sumter, Lexington and Anderson, South Carolina.

In July 1993, CSMP staff worked with two teachers in Charlotte, North Carolina in giving CSMP training workshops. These teachers previously attended a CSMP training and had been teaching the program in their classrooms. They then conducted other CSMP training workshops in their districts and will be available to train in other places in North Carolina.

At this time there are 54 certified CSMP trainers in 25 states. Not all of these people have been active in the past couple of years, so there is a need to remove some names from the list. Other CSMP coordinators are active in training for their own districts but are not listed as certified CSMP trainers.

## **2. Quality of Adoptions**

During the past several years, we have done ongoing cooperative research studies using MANS Tests (see section one) in three districts. In all cases, the results verified the claims made in our 1992 submission to the PEP. Further, these studies indicate that the sites have been able to maintain and/or improve their excellent performance for many years beyond the initial implementation.

We are including in Appendix A reports from Guilderland and Manhasset, New York and Hillsborough Township, New Jersey since they are places where we did four or more year studies. Also, in Appendix A we include a copy of the successful submission to the PEP—approved April, 1992.

Perhaps the best evidence of quality adoptions is found in expansion and retention data. Each year in the last two we reported expansions in approximately 25% of sites. The retention rate is approximately 90%.

## **3(a). Techniques used in obtaining adoptions**

### **i. Articles, Advertising, and Exhibits**

Although we do little costly advertising in publications with wide distribution, we do try to take advantage of articles in various publications and we encourage sites to “advertise” their success with CSMP. Some examples of newspaper and newsletter articles about CSMP are in Appendix B. Articles or publications that referred to CSMP include: ASCD Curriculum Update on Mathematics Education (January 1992); the Triangle Coalition Directory of Mathematics and Science Programs; *The Guide to Math and Science Reform* (fall 1994) from the Annenberg/CPB Math and Science Project; *A Winning Formula* by Jennifer Chauhan in *Teacher Magazine* (September 1994); *Math CSMP Style* by Peggy Odell in *R&D Preview*; *EDTALK What We Know About Mathematics Teaching and Learning*; *The America 2000 Directory of Promising Practices*; and *Math FINDER: Resources for Mathematics Reform* from EDC and the Learning Team. Unfortunately, we do not receive copies of all such articles and references automatically, so there are probably others we did not mention.

Further we try to include some mention of CSMP activities in every McREL newsletter published four times a year. We send announcements to NDN Facilitators for inclusion in their newsletters.

This past year we did advertise in *Teaching Children Mathematics*, one of the journals of the National Council of Teachers of Mathematics (NCTM). In the November 1994 issue, CSMP's brochure was pictured along with a descriptive paragraph in the Math Catalog Showcase section. Thus far we have received about 300 requests for additional information as a result.

Each year we request a not-for-profit exhibit at the annual conference of the National Council of Teachers of Mathematics. Further, we have sent materials to several state facilitators for their exhibits at state education conferences, and we had an exhibit at the joint North Carolina/South Carolina state teachers of Mathematics conference.

"Advertising" in this way does not result quickly in new CSMP adoptions. It often takes more than a year for school districts to review the curriculum and plan for implementation. However, this dissemination strategy does keep the CSMP name in front of the mathematics education community and potential customers for recognition purposes. They are aware that CSMP is still available as an alternative to the more traditional textbook programs. We are convinced that such advertising has long term benefits.

ii. Awareness and Professional Conference

During the grant period we participated in 30 awareness conferences in 15 states. Further we sent materials to NDN Facilitators to use in their presentations and to certified trainers to do awareness presentations.

Also during this period we participated in 20 professional conferences and CSMP certified trainers participated in another 12 such conferences where CSMP was highlighted in their presentations.

In the past we have found that approximately 40% of our new adopters had an initial or subsequent (prior to decision to adopt) contact with CSMP through these conferences.

We consider awareness conferences a necessary and effective dissemination strategy especially when the audience interest and size is appropriate and when our presentation time is at least one hour. Presentations at professional conferences have the added benefit of keeping the CSMP name before the mathematics educators who in turn may recommend the program to others.

iii. Telephone/Mail Contact With All Inquirers/Previous Non-Adopters

We respond to initial and follow-up requests for information averaging about 30 per month. Information materials such as the basic brochure, catalogs, the CSMP profile, articles, preview packets, scope and sequence, evaluation data, and other specific information pamphlets were used for this purpose. After a new look was given to our basic brochure and preview packet, we revised the second level information pamphlets to carry this look as well. See Appendix C.

Prior to an awareness presentation, we mail an announcement to those in the area who have previously requested information. We follow each awareness presentation with a mailing of some second-level information as requested or specific to the individual's role.

We also do a limited amount of telephone follow-up with previous non-adopters. Most often we find such follow-up is successful if the individuals contacted have been able to see CSMP in action, for example at a demonstration site.

iv. Site Visits

We continue to encourage potential adopters to visit a CSMP site. When this is convenient, it proves to be a very effective dissemination strategy because seeing CSMP in use with an enthusiastic teacher and excited youngsters is the best advertisement for the program. However, it is not often easy for an ESP to make a visit especially in areas where there is no close CSMP site.

v. Pre-adoption (in depth) Awareness Workshops

We conducted in-depth awareness workshops in Traverse City, Michigan, in Chicago, Illinois, and in Charlottesville, Virginia. We have subsequently worked with many of the participating districts to implement CSMP. Such workshops have been very effective, but they are difficult to schedule. It is difficult to get invitations to do an in-depth workshop since it usually requires released time for teachers.

vi. Lending Library

During the reporting period we filled 73 requests from 25 states for examination sets of materials from our lending library. Since CSMP is a complete K-6 curriculum which may replace a textbook, we find it necessary to make examination sets of materials available. However, our experience is that textbook committees often do not know how to review the CSMP materials without some awareness presentation. Therefore, we try to limit access to the lending library. We find this dissemination strategy effective when combined with a site visit or an in-depth awareness workshop. With our preview packet, we attempt to limit the use of the lending library.

vii. Mini-package Samplers

There were approximately 1 200 requests for the three mini-package samplers during the reporting period. We are unable to trace new adoptions to the purchase of these samplers; however, we believe this is a successful effort because of their popularity. We do attempt to follow-up with those who have ordered the mini-packages to encourage them to seek more information about the total program.

**3.(b) Problems in Obtaining Adoptions**

Although there has been a great deal of interest expressed in CSMP either through initial requests for information or enthusiastic participation at awareness conferences, there is relatively little follow-up by those expressing interest, and an extremely small percentage of them ever become adopters. A great deal of time, effort, and money seems to be required to bring about an adoption. We believe there are several reasons for this:

- (i) CSMP is a mathematics curriculum (as distinguished from an arithmetic curriculum) and contains considerable content that is unfamiliar (and therefore imposing) to elementary teachers;
- (ii) CSMP employs pedagogical approaches and languages that are new to teachers;
- (iii) Training requirements for CSMP are very demanding (e.g., a fourth-grade teacher is asked to participate in about 30 hours of training before beginning to use the materials);
- (iv) The consumable format for much of the CSMP student materials makes it appear expensive compared to a textbook program and precludes its presence on some state textbook adoption lists. Further, the organization and approach is different enough from a usual text that the curriculum is hard to “review” by textbook committees without some in-service.

- (v) CSMP covers grades K-6, whereas some elementary adopters are seeking a K-8 program or K-4 and 5-8 programs.
- (vi) The trend in education toward site based management and school budgets eliminating coordinators have forced us to work more with individual schools than with districts. Further, lack of a coordinator sometimes restricts follow up and site coordination.

### 3.(c) Solutions

There are not easy solutions to these problems.

- i and ii We have been able to allay teacher apprehension about content and pedagogy when they participate in an in-depth pre-adoption workshop; however, there is naturally reluctance on the part of schools to release teachers for a full or half-day workshop. A longer range hope is to get appropriate pre-service materials into the hands of mathematics educators. We have made efforts to do this through regional centers with certified trainers and professional conferences. We are unable to report significant benefits, but we do have some sites where teachers report their pre-service experience.
- iii. We committed ourselves to seek alternative teacher training models and generally compressed primary and intermediate schedules. We experimented (via local coordinators) with some scheduling alternatives and with shared teaching assignments. Furthermore, we wrote a self-instructional guide for intermediate (4-6) teachers. We now offer some choice in training for an implementation, but the results we get on evaluation of training suggest that the 30 hour workshop model is still preferred. In fact, many places continue to use two separate one-week workshops—a primary (K-3) and an intermediate (4-6) level.
- iv. We have done cost comparisons that indicate the CSMP consumables in fact are less expensive than texts together with the optional materials that schools purchase for consumption. The textbook adoption list problem is more difficult because the process of being approved varies considerably from state to state.  
  
Our lending library is purposefully limited, because we find it necessary to discourage review of the materials by committees where there is no awareness. Our preview packet is an attempt to incorporate awareness with a preview of materials.
- v. We have worked with several sites on materials to supplement the 7th and 8th grade curriculum and extend the students' background with CSMP. This work is now shared when the question arises. Further, we are piloting a middle school extension of CSMP through 8th grade. There is still considerable development effort needed to complete a K-8 curriculum.
- vi. We have expanded our CSMP Network to include more individual schools in many districts, and we have offered training in institutes. In some places we ask one school to host a workshop and open it to several. Principals, assistant principals, and classroom teachers are becoming our contacts.

### 4. Facilitator activities/practices that are most helpful

- (a) About one-third of the NDN Facilitators provided some support to our project during the reporting period. Among those that did, the most valuable activities were:
  - Assisting with getting CSMP presentations at awareness conferences or other forums in their states. In some cases, Facilitators planned awareness conferences and invited us to take place—usually with shared expenses. In other cases, Facilitators recommended our project for presentation at other scheduled meetings.

The states that provided some support for these activities were: CO, FL, ID, IL, KY, MO, NC, ND, NV, NY, OH, SC, SD, VA, and TX. Further, the Private School Facilitator has assisted in getting CSMP presentations at conferences of private schools.

- Highlighting CSMP in articles in their newsletters or other publications. Since we do not always receive copies of newsletters from Facilitators we cannot say how often this occurs. We do know at least a few Facilitators that have provided this support: CO, IL, MN, and VA. The Private School Facilitator has also reported on CSMP in communications.
  - Keeping D/Ds informed of new programming emphases within their states and procedures for various funding applications. Few states have provided this information except in Facilitator profiles. Those that have made additional efforts to keep us informed are CA, FL, IL, MD, MO, NY, and TX.
  - Helping ESP's find adoption money or write grant applications. To our knowledge the states that have supported us in this way are IL, MO, NY, and SC.
  - Providing technical assistance and/or funds for training sessions. Several states have given support to this activity: ID, IL, KY, MO, ND, NY, OH, SC, and VA. The Private School Facilitator has also provided such support to several private schools.
  - Identifying and supporting potential certified trainers. Several states have worked on activities involving our certified trainer system: CO, IL, KY, MO, NC, NY, SC, and VA. The Private School Facilitator also has worked with us to identify and support certified trainers from private schools.
  - Periodically updating us on their adoption records or other contacts, and providing follow-up assistance to sites. A few states support us with these activities: FL, KY, MO, NJ, NY, SC, and VA.
- (b) Among the above activities used by Facilitators, the ones that helped most in obtaining adoptions were:
- Help to ESP's on grant applications or finding adoption funds—in Illinois, Missouri, New York, and South Carolina.
  - Some presentations that allowed for in-depth awareness with appropriate (interested) audiences—in Illinois, South Carolina, and Virginia.
  - Support of training sessions that involved several sites simultaneously—in Idaho, Illinois, Missouri, and South Carolina.
- (c) Approximately 50% of our adoptions were obtained with the assistance of facilitators.

## **5. Certified Trainer System**

(a) During the reporting period, 22 of our certified trainers were active giving awareness presentations, conducting training workshops, teaching pre-service courses using CSMP strategies, giving parent workshops, and providing other technical assistance to CSMP users.

(b) There are four steps for becoming a CSMP certified trainer:

- (i) identified as having appropriate interest, experience, and capabilities;
- (ii) participated in a CSMP training workshop;
- (iii) implemented the program in some setting; and
- (iv) demonstrated knowledge of the program, the NDN, and presentation of CSMP workshops.

Of the 54 certified trainers currently listed, six were identified by state facilitators as part of a program organized by the Oregon Facilitator project to train trainers in ten western states. Several others completed steps

(i) and (ii) of the process as part of this program. Another fourteen people are associated with Universities housing a CSMP regional center. Eleven people listed as certified trainers are previous staff of CSMP having served as part of the development team or as interns. The largest number, 23, of the certified trainers began with steps (ii) and (iii) of the process. That is, they were district CSMP coordinators or CSMP teachers who expressed interest in becoming certified trainers.

(c) Approximately 50% of the adoptions were obtained by or with the assistance of certified trainers.

(d) We plan to continue operating our certified trainer system as a network with a McREL hub. As long as McREL continues with the CSMP publications and employs program knowledgeable staff to manage these publications, we are confident the certified trainer system can provide technical assistance (training and follow up) to adopters.

## **6. Technical Assistance**

(a) The most useful technical assistance we received during the grant period were:

- adoption reports
- the NDN annual conference with sessions devoted to specific assistance areas or sharing strategies, updates on NDN program activities, and the Facilitator exhibit
- Educational Programs That Work
- communications that inform us about activities in the Department of Education
- selected publications from the Department of Education
- consultation on our PEP submission

(b) We would like to have received some additional technical assistance on designing effective advertisements, mail campaigns, and other marketing strategies, and producing quality video tapes for awareness or parent education.

(c) We believe that most D/Ds could benefit from assistance with:

- preparing video presentations
- advertising and other marketing strategies
- managing a certified trainers system
- evaluating program impact
- keeping up to date

We also recommend that D/Ds continue to receive copies of various publications from the Department of Education and that the annual NDN conference continues to offer technical assistance sessions.

## **7. Recommendations for Improving the NDN**

The NDN lacks the recognition it deserves to be more effective. Although the Network seems to be well known on the hill in Washington, D.C., it does not have significant visibility in the field. We believe the Department of Education could give the NDN a publicity push as it has other programs in the past.

One effort that could contribute to the NDN's image in the education communities would be for the NDN to get sessions on the programs of the annual conferences of various professional organizations. This has been fairly common practice for NSF, and during the past two years the Eisenhower Mathematics and Science Program has had several sessions at the annual meetings of NCTM and NSTA. Another effort might be for the NDN to commission one of its technical assistance contractors to write articles for professional publications or for R&D Preview or better yet for popular publications.

## 8. Program Continuation

CSMP does plan to continue operation even after NDN funding ceases. As long as McREL manages CSMP publications, the project would be based at McREL. The sale of publications would then have to support dissemination activities, not simply cover distribution and printing costs. We expect that most aspects of the NDN dissemination model would continue to be used, especially those involving awareness, training, and follow up.

## 9. Summary of Accomplishments

During the two-year grant period we estimate that the project worked with approximately 250 ESPs to implement CSMP. The ESPs represented diverse sites including public and non-public schools in urban and rural settings and among various special populations. Implementation took place in approximately 2 800 classrooms K-6, as well as with some special education groups at other levels. CSMP training workshops reached over 3 000 pre- and in-service teachers and administrators.

CSMP staff and certified trainers have given presentations about the teaching strategies and content of CSMP at over 60 meetings throughout the country. We believe that these sessions are responsible in part for influencing the teaching of mathematics. Certainly we have seen national standards and numerous state guidelines for school mathematics that now emphasize instructional methods and content considerations that CSMP worked on during its development starting over 15 years ago.

## 10. Bibliography

### A. Curriculum Materials

Appendix D has a listing of the classroom materials for CSMP. Other supplemental curriculum materials are:

- i. CSMP Mini-packages:  
Relations and The Language of Arrows  
A-Blocks String Game  
Mini-computer Games
- ii. The CSMP Library (11 Titles)
- iii. Stories by Frédérique:  
Storybook Set I (13 Titles for Ages 5-8)  
Storybook Set II (7 Titles for Ages 8-12)  
Storybook Set III (4 Titles for Ages 10-14)
- iv. Math Play Therapy—Volumes I and II
- v. Activities for TOPS

### B. Books and Reports

- i. CSMP Probability and Statistics—a collection of papers on the teaching of probability and statistics in CSMP's elementary school curriculum.
- ii. CSMP Preview Packet
- iii. CSMP Pre-Service/In-Service Packet—CSMP Teaches Division
- iv. CSMP Final Evaluation Report
- v. Evaluation Report Series—50 Volumes plus 60 Cooperative Research Studies
- vi. MANS Tests Information Packet
- vii. CSMP in Action

- viii. Bulletin of Information for New Sites
- ix. Information for Replications of CSMP
- x. Detailed Scope and Sequence
  - Volume 1 K-1
  - Volume 2 2-3
- xi. Chapter 1 Resource Guide
- xii. CSMP Coordinators Manual
- xiii. CSMP Teachers Workshop Guide for the Intermediate Grades: Self Instructional
- xiv. Certified Trainers Handbook
- xv. CSMP Pamphlets on:
  - Implementation Workshops
  - Supplemental Usage
  - CSMP for Compensatory Education
  - CSMP for Gifted Education
  - Readability Study
  - Social Fairness Study
  - Questions and Answers about CSMP

C. Articles

- i. Armstrong, Richard, *An Area Model for Solving Probability Problems* Teaching Statistics and Probability: NCTM 1981 Yearbook
- ii. Baum, Robert, *10 Top Programs (Building Better Thinkers)*, Learning, February 1990
- iii. Brown, Virginia, *Numbers are Friends You Can Count On*, Early Years 6, April 1976
- iv. Chauhan, Jennifer, *A Winning Formula*, Teacher, September 1994
- v. Connelly, Ralph, *Go For The Odds*, Instructor, January 1986
- vi. Heidema, Clare, *Instructional Strategies for Improving Critical and Creative Thinking in Elementary School Mathematics* Proceedings from Conference of The Mind, NSF 1983
- vii. Kaufman, Burt, *Basic Mathematical Skills and Learning: The CSMP Viewpoint* NIE Conference on Basic Mathematical Skills, Volume I: Contributed Position Papers, 4-6, October 1975
- viii. Kaufman Burt and Haag, Vincent, *New Math or Old Math?—The Wrong Question* The Arithmetic Teacher 24, April 1977
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- x. Kaufman, Burt and Nicholas, Sterling, *The CSMP Elementary School Program* CEMREL 1981
- xi. Marshall, Karen, *Thumbs Up Math* American Education 15, May 1979
- xii. McGinty, Robert and Van Beyman, John, *Do our Math Textbooks Reflect What We Preach* School, Science, and Mathematics November 1986
- xiii. McKnight, Judy, *Learning to Like Mathematics* Virginia Journal of Education, May 1987
- xiv. Odell, Peggy, *Math CSMP Style*, R&D Preview, June 1991
- xv. Schneider, Joel and Saunders, Kevin, *Pictorial Languages in Problem Solving* Problem Solving in School Mathematics—NCTM 1980 Yearbook

- xvi. Shalaway, Linda, *Picking Up The Pieces After New Math* Educational R&D Report 3 Winter 1980-81
- xvii. *Math, Science, and Technology* R&D Notes, November 1985
- xviii. Profile of the Comprehensive School Mathematics Program, March 1982 for National Commission on Excellence
- xix. ASCD Curriculum Update on Mathematics Education (January 1992)
- xx. EDTALK *What We Know About Mathematics Teaching and Learning* (June 1991)
- xxi. MathFINDER: Resources for Mathematics Reform
- xxii. *The Guide to Math and Science Reform*, (Fall1994), Annenberg/CPB Math and Science Project

DEVELOPER DEMONSTRATOR PROJECTS  
FINAL REPORT  
AGGREGATE DATA

REPORTING PERIOD: From end date of last report contained in your continuation application to submission of this report. Indicate period of performance: February 1, 1993 - October 31, 1994

1. Awareness, Certified Trainers, and Demonstration Sites

a. Number of awareness sessions held:	<u>30</u>	+ 20 (professional conference sessions)
	5	
b. Number of new certified trainers:	<u>                    </u>	
Total number of certified trainers:	<u>54</u>	
c. Number of new demonstration sites:	<u>5</u>	
Total number of demonstration sites:	<u>43</u>	

2. Follow-up Services

a. How many adopter sites received on-site follow-up visits from you or your certified trainers? 50

b. Estimate the percentage of all adoption sites that received each of these follow-up services.

Telephone Calls <u>40%</u>	On-site Visits <u>20%</u>
Letters <u>100%</u>	Newsletters <u>100%</u>
Other/specify <u>Survey 100%</u>	<u>Additional Training 40%</u>
<u>Assistance with ordering 100%</u>	
<u>Assistance with evaluation 5%</u>	

3. Individual Adoption Data

a. Number of Public Schools	<u>369 + 317</u>
b. Number of Private Schools	<u>20 + 50</u>
Total number of schools	<u>389 + 367</u>
c. Number of people trained	<u>1 652 + 1 243</u>
d. Number of students participating	<u>33 961 + 25 994</u>
e. Number of states adopting	<u>42</u>
f. Number of new states adopting	<u>3</u>