

Mathematics Helping Corps Interim Report

November 2002

Prepared for the
Office of Superintendent of Public Instruction

THE BERC GROUP, LLC

Evaluation ∞ Research ∞ Consulting

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Executive Summary

The Mathematics Helping Corps program, established in 1999 by the Washington State Legislature, provides assistance to low performing elementary and middle/junior high schools to improve teaching and learning in mathematics. The vision for the MHC program is “Expanding proficiency, excellence and delight in mathematics through carefully planned assistance to schools.” The intent was to develop a research-based model for school improvement that is replicable and continually modified based on evaluation data. Since establishing the program, 38 schools have received assistance. Preliminary evaluation results indicate that the program has had a positive effect on student achievement.

The design used for this evaluation focused on six areas of inquiry:

1. What type of assistance was needed within the school?
2. What type of assistance was provided? (Strategies and Activities)
3. What was the effect of the assistance?
4. Did the type of assistance provided relate to increases in student achievement?
5. Was the assistance provided to Cohort Two effective?
6. Did Cohort One schools sustain gains made in the first two years of the MHC program?

Overall, 169 people from 20 Cohort Two schools participated in evaluation activities that included interviews with the principals, the MHC regional coordinators and teachers. In addition, data from other sources, including two surveys, ITBS and WASL results, and MHC regional coordinator monthly reports were analyzed and synthesized to provide information for the evaluation.

Initially, the MHC regional coordinator began his or her work by learning about the schools he or she was assigned to and identifying needs. During the interviews, the regional coordinator and school personnel identified a variety of needs including low student performance on the WASL, difficulties with curriculum implementation, limited staff awareness of Washington State standards, limited professional development opportunities, limited collaboration among teachers and low expectations for teachers. These findings were consistent with survey results. For example:

- 17% indicated that teachers have knowledge of and use sample WASL assessments developed by the state with examples of scored student responses.
- 19% indicated that the team is very familiar with the Math EALRs and the Benchmark Indicators.
- 28% indicated that math instruction is planned to match the needs of all students, and is based on information about each student’s academic performance or about each student’s academic performances.
- 38% indicated that instruction includes performance tasks, where students are actively engaged in learning activities that are based in real world applications.
- 44% indicated that they regularly use the Math Essential Learnings in planning lessons/instruction.

To address these needs, the MHC regional coordinators have provided schools with a number of activities that are within the scope of the MHC program. The emphasis for Year One was building trust and relationships with school personnel. Other activities included in-service training, model lessons and classroom observations, consultation on curriculum articulation, developing family and community programs, and providing resources to the schools. The degree to which the regional coordinator was successful in conducting these activities was largely dependent upon the degree of acceptance of the coordinator and the MHC program.

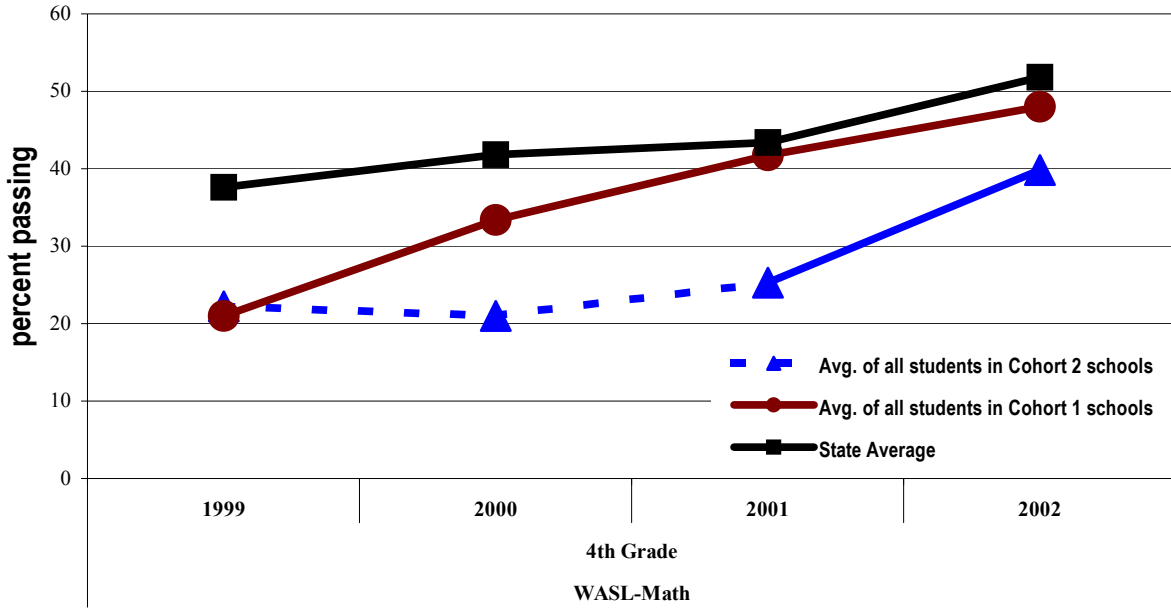
Although the regional coordinators identified successes in every school, they also identified several challenges and concerns. Despite the emphasis for Year One on building trust, there continued to be teachers in nearly every school who lacked buy-in. In addition, administrative changes, staff resistance to change, and lack of collaboration and communication among staff members compounded the difficulties the coordinators faced. Also, some coordinators were working with four schools, and they found it difficult to balance needs and demands of all the schools.

Likewise, school personnel also identified several concerns. Many felt that the application process and short timeline did not allow school administrators adequate time to generate staff support and buy-in. In a few schools, this was still an issue at the end of Year One. School personnel also found the frequent absences of the regional coordinator to be disruptive to the schedule. Finally, personnel at a majority of the schools believe it is paramount to the success of the MHC program to add an additional year to the program. There was a common belief that sustainability would be an issue because math leaders had not emerged in many of the buildings.

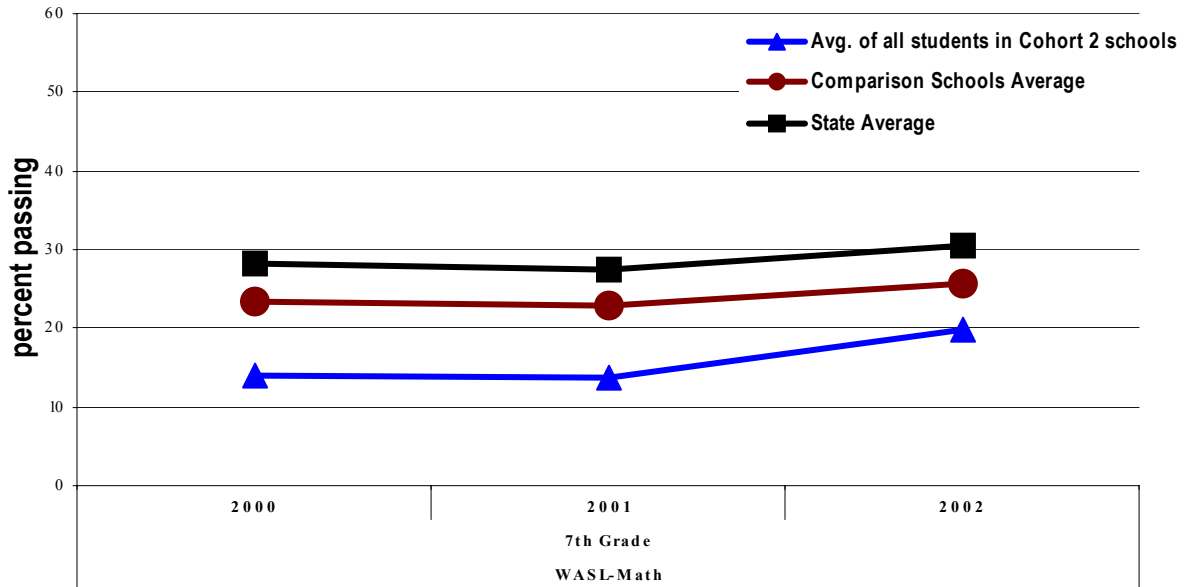
The ITBS and WASL results suggest that the MHC program has had a positive effect on student achievement. The improvement rates for passing the WASL in the fourth grade were higher in MHC schools than the state and a comparison group. Also, fewer students are in level 1 and more students are in level 3. In addition, Cohort One schools have continued to show improvement at a rate greater than the state. These trends are encouraging and will be studied further in the final report November 2003, to determine if they are significant and long lasting.

While middle schools, in general, have demonstrated less growth on the WASL, Cohort Two middle schools had a slightly faster growth rate than the state and the comparison group. The cohort's mean gain was 6.1% while the state gain was 3.0%. The comparison group likewise posted a 2.9% gain.

Cohorts One & Two: 4th Grade Math WASL



Cohort Two: 7th Grade WASL Math



Recommendations

School personnel reported concerns about sustainability, and in some cases, teachers described dependence upon the MHC regional coordinator. During Year Two, begin to work on sustainability and building leadership within the school.

A number of leadership changes have occurred in the schools, and there are varying degrees of principal support. Consider supplying principals with ongoing information about the MHC program and information on strategies they can use to support the program.

School personnel indicated that the MHC regional coordinators were frequently absent due to professional meetings and trainings. Review the necessity of these meetings and consider limiting the meetings and training so the coordinators can increase the time in their schools.

Many administrators and teachers believe that a third year of support would improve sustainability and allow teachers to build leadership skills. Identify ways for the MHC regional coordinators to follow-up with Cohort Two schools.

Many teachers reported there would have been greater buy-in at the outset if they fully understood the program. If another cohort of schools is added to the MHC program, supply the schools with information about the grant well in advance of the application deadline. The information should outline the specifics of the MHC program, as well as the responsibilities of administration and teachers.

Schools that sought out the grant were generally more accepting of the MHC regional coordinator than schools that received unsolicited information. If another cohort of schools is added to the MHC program, spend additional time upfront with those schools that are recruited, to increase the likelihood of staff buy-in.

In some schools, the regional coordinator had to spend considerable time building trust and relationships with school personnel. If another cohort of schools is added, it may be helpful to provide school personnel and the regional coordinator an opportunity to meet prior to being assigned to the school to determine if it would be a good fit.

Many indicated that Year One was spent building trust and relationships. If this process could begin a month or two earlier, perhaps the MHC coordinator would spend less time during Year One building relationships. Consider introducing the MHC regional coordinator to school personnel in the school year prior to receiving ongoing assistance.

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MATHEMATICS HELPING CORPS AN INTERIM REPORT

INTRODUCTION

The Mathematics Helping Corps (MHC) program, established in 1999 by the Washington State Legislature, provides assistance to low performing elementary and middle/junior high schools to improve teaching and learning in mathematics. The purpose of this report is to provide formative feedback about the assistance provided to schools in Cohort 1 and Cohort 2 and the effect of the assistance to personnel at the Office of Superintendent of Public Instruction.

The vision¹ for the Mathematics Helping Corps program is “expanding proficiency, excellence and delight in mathematics through carefully planned assistance to schools.” According to *The Mathematics Helping Corps Handbook*, the purpose of the program is “to build a research-based model of school improvement in mathematics that is replicable in any school across the state of Washington.” In addition the handbook states: “The model will be continually evaluated and modified, based on the evaluation data, to ensure quality, sustainability and maximum results in mathematics instruction and student performances as measured by the Washington State Assessment System.” The four goals of the program include:

1. To increase student proficiency and excellence in mathematics performance by building a foundation of understanding connected to the delight of exploration and discovery in mathematics.
2. To maximize educators’ skills in mathematics through research-based training and support in mathematics content knowledge, exploration and discovery, instructional strategies for all students, assessments, and interpretation of assessment data.
3. To expand administrators’ knowledge of effective mathematics instructional strategies, assessments, and interpretation of assessment data.
4. To develop and implement family and community involvement programs that assist students in achieving the mathematics essential learnings.

In 1999, eight MHC regional coordinators were assigned to 16 schools as a part of Cohort 1, to provide assistance for two school years between fall 1999 and spring 2001. An additional MHC regional coordinator was hired in 2000 to provide assistance to two new schools. These schools were designated as Cohort 2 schools, and they will receive assistance for three school years between fall 2000 and spring 2003. Twenty additional schools were selected in the summer of 2001 to be included as Cohort 2 schools, for two years of assistance. The schools in each of the cohorts are listed below:

¹ This section adapted from The Mathematics Helping Corps Handbook: Draft Version.

Cohort 1 Schools: 1999 – 2001

Camas Elementary
Clear Creek Elementary
East Port Orchard Elementary
Highlands Elementary
McClure Middle
Orchard Center Elementary
Pratt Elementary
Ridgeview Elementary
Seahurst Elementary
Stewart Elementary
Sunset Elementary
Tieton Elementary
Tolt Middle
Union Gap K – 8 School
Whitman Magnet Elementary
Whitney Elementary

District

Wapato
Central Kitsap
South Kitsap
Renton
Seattle
West Valley
Spokane
Spokane
Highline
Puyallup
Cheney
Highland
Riverview
Union Gap
Tacoma
Yakima

Cohort 2 Schools: 2000 – 2003

Kittitas Elementary/Middle
Walter Strom Middle

District

Kittitas
Cle Elem/Roslyn

Cohort 2 Schools: 2001 – 2003

Adams Elementary
ASA Mercer Middle
Campbell Hill Elementary
Centennial Elementary
Chinook Middle
Cooper Elementary
Covington Elementary
East Farms Elementary
Explorer Middle
Gray Middle
Harrah Elementary
Hilltop Elementary
Jackson Park Elementary
Linwood Elementary
Olympic Elementary
Roosevelt Elementary
St. Helens Elementary
Trentwood Elementary
West Hills Elementary
Woodbrook Middle

District

Spokane
Seattle
Renton
Bethel
Highline
Seattle
Kent
East Valley
Mukilteo
Tacoma
Mount Adams
Highline
Central Kitsap
Spokane
Longview
Yakima
Longview
East Valley
Bremerton
Clover Park

EVALUATION DESIGN

Evaluation Questions

The general questions being explored during this evaluation are:

1. What type of assistance was needed within the school?
2. What type of assistance was provided? (Strategies and Activities)
3. What was the effect of the assistance?
4. Did the type of assistance provided relate to increases in student achievement?
5. Was the assistance provided to Cohort Two effective?
6. Did Cohort One schools sustain gains made in the first two years of the MHC program?

Data Sources

To address these questions data are being gathered from multiple sources throughout the evaluation:

- *School Improvement Plan and Professional Development Survey*
- *School Indicators Rating Scale*
- Interviews at 20 schools in Cohort Two
- MHC regional coordinator monthly reports
- WASL and ITBS Results
- MHC documents and materials

School Improvement Plan and Professional Development Survey

The *School Improvement Plan and Professional Development Survey* (SIPPDS), a modified version of the *Knowledge and Use Survey*, was initially created for the Washington Mathematics Helping Corps and later modified by the Evergreen School District. The survey, which was administered to teams of teachers in Cohort Two in fall 2001, was designed to assist teachers in developing meaningful student learning improvement plans and to determine staff needs for professional development. The survey provides baseline information on teachers' knowledge of the state Essential Academic Learning Requirements (EALRs), curriculum alignment, use of research-based mathematics instructional strategies, and the use of mathematics content, resources and assessment knowledge.

School Indicators Rating Scale

The *School Indicators Rating*, developed for the Mathematics Helping Corps, was administered to teams of teachers in all Cohort Two schools in fall 2001 to provide baseline information on the school progress toward school improvement in mathematics. The survey provides indicators in several areas including Curriculum and Instruction, Assessment/Data Analysis, Collaborative Planning, Special Student Populations, Professional Development, Family/Community Involvement and Supportive Learning Environment. These indicators are considered across five

stages that range from a *Static System* to a *Dynamic System*. The ideal school culture for teaching and learning mathematics is generally represented in the indicators of a *Dynamic System*.

Interviews at 20 Cohort Two Schools

In addition to reviewing survey data at the 22 Cohort Two schools, evaluators conducted site visits at 20 of the 22 schools to gather qualitative information, to verify baseline survey findings and to gather information relative to the evaluation questions described above. Interviews did not occur at two of the schools before the interim report was due to scheduling conflicts. Interview information from the final two schools will be added to the final report. Overall, 169 people participated in evaluation activities that included interviews with the principals and MHC regional coordinators in each of the 20 schools, as well as a group of teachers at each school picked to represent the range of views among the staff. The interview protocols are provided in Appendix A.

MHC Regional Coordinator Monthly Reports

Monthly reports submitted by the MHC regional coordinators were reviewed to provide additional information about the regional coordinators activities in his or her assigned schools, as well as the successes and difficulties.

WASL and ITBS Results

WASL and ITBS results were reviewed and analyzed to determine the progress Cohort One and Cohort Two schools made in mathematics. Cohort One and Cohort Two schools are compared to statewide average gains/losses in mathematics, as well as to a comparison group. The comparison group used in this report is similar to the group of MHC schools in enrollment, ethnicity, and socioeconomic status as measured by the percent of students receiving free and reduced lunch.

MHC Documents and Materials

Throughout the year, evaluators examined applicable materials including application materials, information packets developed by the MHC regional coordinators and the Mathematics Helping Corps, and *The Mathematics Helping Corps Handbook*.

MATH HELPING CORPS: IN CONTEXT OF EFFECTIVE SCHOOLS RESEARCH

Many of the Cohort I and Cohort II schools have shown short-term achievement gains. However, the question to consider is “Are gains sustainable?” Although this remains to be seen, ongoing research on effective schools provides insight as to what schools must likely do to sustain positive impact of programs such as the MHC.

As noted by Fouts and Brown (2001) schools that treat the MHC as a 1st Order Change, one that is seen as an isolated solution to a specific problem – low math scores, are less likely to sustain the impacts of the program than are schools that embrace the fundamental ideals that the MHC strategies embody (2nd Order Change). If indeed at the conclusion of the MHC assistance schools have shown *statistically significant* and *substantial* improvement, it is likely that for the gains to be sustained over time there must be a fundamental shift in the way schools function to help support the change once the MHC coordinators are no longer working with the schools. Leaders within the schools should, therefore, concern themselves not only with initial improvement efforts but also with how to maintain gains over time. Whether improvement and success can be sustained over time is likely to be a question of school culture, leadership and teacher attitude. In their 2001 MHC final report Fouts and Brown chronicle the numerous research findings that outline what schools need to do to perform successfully in a standards-based environment, and building upon that base are three recent research projects that once again focus on what schools need to do (and what they need to *not* do) to sustain achievement gains. These studies were conducted by Seattle Pacific University, University of Chicago, and University of Washington.

Seattle Pacific University ²

In the fall 2001, the Washington School Research Center (WSRC) at Seattle Pacific University examined three years of data (1999, 2000, 2001) in order to identify 16 elementary schools that demonstrated either a consistently high composite passing rate on the 4th grade WASL, or a strong positive trajectory of passing rates with the latest year (2001) in the top group of schools. This project resulted in the publication of “Bridging the Opportunity Gap: How Washington Elementary Schools are Meeting Achievement Standards” (Washington School Research Center, 2002).

When participants in the study were asked to identify the reasons for their success, teachers, principals, and central office administrators were consistent in their responses. Findings were similar across schools and districts, resulting in several clearly identifiable themes. Four of these factors were categorized as primary factors and they are viewed as essential elements of a successful and effective school because they were present in all or the vast majority of the 16 schools studied. The researchers assert: “Without these factors in place it is doubtful that fundamental change can occur; nor is it likely that achievement gains will be more than short-term or modest.” Primary factors include:

² This section is adapted from the Washington School Research Center publication: “Bridging the Opportunity Gap: How Washington Elementary Schools are Meeting Achievement Standards” (2002).

- A caring and collaborative professional environment
- Strong leadership
- Focused, intentional instruction
- The use of assessment to inform instruction

These four *primary factors* appear to have led to the necessary changes in the school to enhance student achievement. First, the *school and professional environment* is one characterized by adults who care about each other and care about their students. They are able to put adult issues aside for the sake of the students and are able to work together to help students achieve. Second, there is *strong leadership* in the schools. In most cases this came from the principal, however, in several cases when strong principal leadership was not present strong teacher leaders emerged and led improvement efforts. These leaders expressed a clear mission for student academic success and a clear vision for helping every student meet the standards. Third, the *curriculum and instruction in the schools is clear and focused*. Teachers are committed to giving up “pet” projects and isolationist teaching practices for classroom experiences focused on the “essential learnings.” Teachers did not see poverty as an excuse for students to not learn; they believed their students could achieve regardless of their background. Fourth, *assessment results are used to inform instruction*. WASL and other assessment results are seen as valuable sources of information to help diagnose individual student needs, and teachers are able to prescribe learning plans for students based on the assessment data. Whether using state mandated assessments or classroom based assessments teachers are using data to direct their instruction.

A fundamental characteristic of all of these schools is that the majority of the educators are “on board” with the state reform efforts. At the most basic level, this requires a clear understanding that the current direction of state reform is built on a different set of beliefs about the school enterprise. The reform requires a narrowing of the curriculum to “essential learnings,” the setting of high standards for all students, the necessary changes in instructional strategies, regular assessments, and accountability. These changes represent a deep philosophical shift in the educational approach and a drastic change in the professional environment in which most teachers have spent their entire careers. It appears that this educator understanding is a prerequisite before any school can reach its potential under the current reform efforts.

University of Chicago

At the University of Chicago professors Anthony Bryk and Barbara Schneider recently added to the research related to school culture in their book *Trust in Schools: A Core Resource for Improvement (2002)*. Based on their work with the Chicago Public Schools they argue that trusting relationships among teachers, principals, parents, and students are essential prerequisites to academic achievement gains. They stated:

"We have identified a missing ingredient in the reform recipes: the nature of social practice among adults in school communities and how this is mobilized for sustained school improvement. We view the need to develop relational trust as an essential complement both to governance efforts that focus on bringing new incentives to bear on

improving practice and to instructional reforms that seek to deepen the technical capacities of school professionals."

They assert that trusting relationships are manifested in four ways: respect, competence, integrity, and personal regard for others. In addition they found these constructs correlate with student achievement gains. According to Bryk and Schneider schools reporting strong *trust links* in 1994 were three times more likely to report eventual improvements in reading and mathematics scores than those where trust levels were low. By 1997, schools with high levels of trust had a one in two chance of being in the "improving" category, compared with lower-trust schools, which had only a one in seven chance. Schools whose staffs reported low levels of trust both in 1994 and 1997 had "virtually no chance of showing improvement in either reading or mathematics." The researchers claim, "These data provide our first evidence directly linking the development of relational trust in a school community and long-term improvements in academic productivity."

University of Washington

The Center On Reinventing Public Education at the University of Washington took an antithetical approach to effective schools research by exploring the practices of schools struggling to make achievement gains (McCarthy & Celio 2001). In their report: "Washington State Elementary Schools on the Slow Track Under Standards-Based Reform" the authors outline *leadership*, *culture* and *governance* characteristics present in schools where students are not showing academic success. These include:

- Upheavals in leadership
- Weak leadership
- Dysfunctional cultures
- Slow process of consensus building

In these schools teachers expressed frustration with recent and constant turnovers in administrative leadership. One person noted, "We've had three different principals in four years." In addition to changes in leadership, weak leadership was cited as a common problem in the schools. Among the descriptions of weak leadership were: (1) lack of strategic vision for planning; (2) unwillingness to spearhead meaningful reform; and (3) inadequate attention paid to the institutionalization of reform initiatives.

In addition to leadership issues, another common trait of struggling schools was dysfunctional cultures. As one principal stated: "The former principal said he pitied me because to him this is the worst school in the state as far as people working together." The dysfunction was characterized by distrust and resistance among veteran teachers to principal-led reform initiatives and minimal commitment to education reform, a mentality that "this too shall pass," and disdain for the WASL assessment. One person said, "The test might be realistic for an upper-class suburban kid with two well-educated parents at home, but it doesn't reflect what our kids can do."

Finally, a slow process of consensus building characterized the governance of the schools. One person said, “. . . we don’t move forward until everyone says they can live with it.” Another stated: “There’s a real culture of distrust here . . . All changes have to receive full staff consent or they don’t happen.”

Implications of the Research for Washington’s Schools ³

For those schools that have reached high standards and those who strive to do so there are specific implications for school improvement in this research.

- It is conceivable that many teachers do not understand the true depth or nature of the philosophical assumptions underlying a high standards environment, nor the true nature and depth of the changes required in the professional environment. Professional development strategies must start at this level, and only with understanding of the underlying philosophy should professional development activities proceed into specific techniques for bringing about the needed changes.
- For the reform effort to move forward at any given school, teachers must be “on board” with the direction of school reform. Without the necessary acceptance of the idea of a high standards environment and all that it implies, other efforts will achieve little. If this acceptance is not forthcoming, then the third leg of the reform movement, accountability, must become a reality.
- Leadership training for principals and/or key teachers should help them to first understand the nature and scope of the changes that are needed at the school, and only then should specifics, such as curriculum development, be attempted.

Student success in a high standards environment is best achieved when reform is accompanied by a fundamental and philosophical change in educator beliefs and attitudes about teaching and learning, and changes in the professional culture of the school.

³ Implications adapted from: “Bridging the Opportunity Gap. How Washington Elementary Schools are Meeting Achievement Standards” (Washington School Research Center, 2002).

SCHOOL COACHING TO BRING ABOUT SCHOOL CHANGE

In addition to putting the school reform efforts in perspective it may also be helpful to put the MHC coaching strategy in perspective with other coaching support models. It is helpful to recognize and understand the strategy and the theoretical model being used. While all school coaches work as change agents, individual coaching programs employ distinct theories of change and different working protocols. Several agencies including public universities, government agencies, for profit and non-profit organizations and private foundations offer a variety of coaching services. The following chart is an overview of a few organizations from around the country that provide classroom, school and district based coaching services (see Table1).

Table 1 – Coaching Models

<p><u>New Teacher Center – classroom level</u></p> <p>The New Teacher Center at the University of California Santa Cruz is a national resource dedicated to new teacher development by providing trainings and consulting services to teachers and administrators.</p>
<p><u>Math Helping Corps – school & classroom level</u></p> <p>The Washington State Legislature established the Math Helping Corps to provide free assistance to elementary, middle and junior high schools with low student performance in mathematics through a team of regionally based mentor-coordinators.</p>
<p><u>National Board Certification – classroom level</u></p> <p>This program concentrates educational reform in the classroom where teaching and learning takes place and provides an advanced teaching credential and challenging professional development.</p>
<p><u>School Improvement Assistance Program – school level</u></p> <p>Using a combination of state and federal resources, the Office of the Superintendent of Public Instruction (OSPI) provides school improvement facilitators to help improve student achievement at Title I schools in Washington that are not making “adequate yearly progress” for two consecutive years.</p>
<p><u>The Learning Network – classroom level</u></p> <p>The Learning Network (TLN) supports school-wide changes in teachers’ theory and practice by building mechanisms for continuous professional development. A key component of TLN is the training of two school-based teacher leaders.</p>
<p><u>Annenberg Challenge – school level</u></p> <p>The challenge grants (in 35 states) embrace a wide range of school reform strategies, structures and processes including building leadership capacity within schools through the use of coaches.</p>
<p><u>Bay Area Coalition of Equitable Schools (BayCES) – school level</u></p> <p>This Coalition of Essential Schools (CES) affiliate provides fee-based coaching in the San Francisco Bay Area for CES member schools. Schools participate on a voluntary basis but are selected for participation by BayCES.</p>
<p><u>Boston Public Schools – school & classroom level</u></p> <p>The Boston Plan for Excellence (BPE) is designed to bring “Whole-school Improvement” to every public school. There are several aspects to the improvement efforts, but they are all supported by either a Change Coach with a background in school reform and /or a Literacy Coach with and expertise in instruction.</p>

Coaching Models – Continued

<p><u>Center for Collaborative Education – school level</u></p> <p>The Center for Collaborative Education (CCE) is comprised of a number of New England based networks and projects, which share common ideals regarding equity, authentic assessment, smallness and school autonomy. CCE provides services, including coaching, to all of its network schools.</p>
<p><u>Collaborative Coaching and Learning (CCL) – classroom level</u></p> <p>The CCL provides ongoing, intensive professional development – expert training, classroom demonstration, and feedback – for teachers on Reader’s Workshop and Writer’s Workshop and helps them to become reflective practitioners.</p>
<p><u>Houston Annenberg Foundation – school level</u></p> <p>The focus of professional development at the Houston Annenberg Foundation centers on creating collaborative learning communities. One aspect of the program teaches teachers to conduct “Walk Abouts” and to provide collegial coaching support following models and protocols similar to Critical Friends in CES schools.</p>
<p><u>Intel Teach to the Future – classroom level</u></p> <p>This program is designed to train master teachers in a Local Education Area (LEA) who will then provide training to teachers. The curriculum supports hands-on learning while creating curricular units and evaluation tools that address national standards. By 2003, over 400,000 classroom teachers around the world will be trained through the program.</p>
<p><u>Mass Insight – school level</u></p> <p>The Mass Insight Building Blocks program originated in Massachusetts and is being expanded to other states including Washington State. This is a web-based program designed to provide blueprints to schools on how to reform. Program components include studying Effective Schools (EP) and school-wide professional development designed to create collaborative partner/mentor schools.</p>
<p><u>Small Schools Coaches Collaborative – school & classroom level</u></p> <p>The Small Schools Coaches Collaborative (SSCC) is a partnership between the Small Schools Project, the Coalition of Essential Schools Northwest Center and the National School Reform Faculty. SSCC was established with support from the Bill & Melinda Gates Foundation to provide coaching to grantee schools around Washington State. Coaches are provided free to Achiever grantees, but other grantee schools pay for services.</p>
<p><u>Stupski Family Foundation – district level</u></p> <p>The San Francisco based Stupski Family Foundation supports district-wide improvement in public education by working in partnership with districts rather than individual schools. The foundation's new District Alliance Program supports the establishment of multi-year strategic plans that align district-wide systems and resources. Grants provide a District specialist to assist teachers, principals, and parents to use student assessment data to improve instruction.</p>
<p><u>Teacher Leadership Project (TLP) – classroom level</u></p> <p>This three-year, \$45 million grant initiative in Washington State has been expanded nationally and provides leadership development for K – 12 teachers. Participants in the TLP receive in-depth training, as well as hardware and software to create a technology-rich learning environment.</p>

MATHEMATICS HELPING CORPS PROGRAM IN COHORT ONE AND COHORT TWO

Overall, 169 people participated in evaluation activities that included interviews with principals, MHC regional coordinators and teachers. In addition, data from other sources, including two surveys, were analyzed and synthesized to provide the information below.

Grant Application

Elementary and middle schools that had a low percentage of students meeting or exceeding standards on the Mathematics portion of the WASL and had a discrepancy in the assessment data, such as higher reading scores, were eligible to apply for the Mathematics Helping Corps grants. Schools that met these stipulations were identified and encouraged to apply. In order to receive the grant, schools had to demonstrate evidence of prior success, evidence of thinking ahead and identifying new goals for the school, evidence of principal support, evidence of buy-in and commitment from teachers, and evidence of the ability to leverage district and school resources to support the MHC regional coordinator.

Principals reported learning about the grant in one of two ways. First, the vast majority of the principals in Cohort Two reported receiving unsolicited information via mail or a telephone call indicating they were eligible to apply. Principals indicated they had little time to learn about the grant, present it to the staff, and generate support among the teachers due to a quick deadline. Most introduced the grant as an “opportunity” during a staff meeting and asked the teachers or math leadership team to support the grant application. The teachers reported mixed reactions. Some were excited and acknowledged that they needed the help, whereas others felt embarrassment at being identified as a school in need. Due to the short turn-around time, some teachers were not aware of the grant application and were surprised when they received the grant. Others did not fully understand what the grant entailed and expressed concerns that they would be evaluated or have to assume additional responsibilities. Overall, the MHC regional coordinators had to spend considerable time building trust and describing their work to the teachers to generate buy-in.

The second method involved the principal and staff seeking out the grant. In three of the schools, administrators applied for the grant as a part of Cohort One, but were not selected. Determined that the grant was important for their success, the principals spent time learning about the grant, talking to administrators from Cohort One schools that were receiving support and developing political capital within their school. Staff members at these schools often reported a high level of support, and they believed that they were better informed about the grant and ready to receive the assistance.

There was a general perception among teachers, administrators and the MHC regional coordinators that acceptance and teacher buy-in was easier to establish when schools were knowledgeable about the grant, and the principal had a chance to allow faculty members to decide that they wanted to pursue the grant. When this occurred, the MCH regional coordinators appeared to be able to establish trust more quickly and could begin the work sooner. One person said, “Seeking it [the grant] requires the school to have more buy-in.”

Type of Assistance Needed

The principals, MHC regional coordinators, and the faculties identified several specific areas of need. These included: low student performance on the WASL, difficulties with curriculum implementation, limited staff awareness of Washington State standards, limited professional development opportunities, limited collaboration among teachers, and low expectations for students. The following sections include results from interviews, the *School Improvement Plan and Professional Development Survey*, and the *School Indicators Rating*.

Low Student Performance on the WASL. The staff and administration at every school identified low WASL scores as an area of concern. The passing rates for the Math WASL for Cohort Two schools ranged from 13% to 52% for elementary schools and 9% to 25% for middle schools. At some schools, staff members had reviewed the results and could site the strands of strength and weakness, but this level of awareness was inconsistent across schools. In many elementary school cases, it was clear that responsibility for the WASL had fallen primarily on the fourth grade teachers; teachers at other grade levels knew very little about the test and the scoring method. One person noted that the students “have been taking a test they weren’t prepared for.” Results from the *SIPPDS* indicate that very few teachers engaged in activities to prepare students for the WASL.

- 7% indicated that teachers have knowledge of and use the NCS Mentor CD with multiple sample assessments and samples of scored student responses in mathematics.
- 15% indicated that teachers have knowledge of and use performance tasks (tasks using rubrics or scoring criteria where students are taught or assist in developing the criteria and use the criteria when formulating their response.)
- 17% indicated that teachers have knowledge of and use sample WASL assessments developed by the state with examples of scored student responses.
- 17% indicated that teachers have knowledge of and use Mathematics Toolkits and Classroom Based Assessment tools that have been developed by the state.

Difficulties with Curriculum Implementation. Cohort Two schools either were in the process of a curriculum adoption or needed assistance articulating a newer curriculum between grade levels and aligning it to the EALRs. Teachers reported that they did not have the time or knowledge to align the curriculum and saw the MHC regional coordinator as a resource in this area. One person said, “We wanted to bring someone on board for time management and lining up the new curriculum to the EALRs.” Teachers reported several issues that made the adoption of the new curriculum difficult. They indicated that they were uncomfortable with the curriculum, that they were unable to complete the books, that different teachers were using different books, that no manipulatives were being used, and that there was no cohesiveness between grade levels. In addition, teachers often reported that the basic requisite skills were not adequately addressed in the new curriculum, and some teachers reverted to their old books for practice in computation. Interview findings are less optimistic than survey results. However, they all support low to moderate levels of curriculum articulation and alignment to the EALRs.

- 36% indicated that they have knowledge of and use the district’s mathematics curriculum frameworks.
- 44% indicated that they regularly use the Math Essential Learnings in planning lessons/instruction.
- 52% indicated that all teachers have a copy of the School District’s Mathematics Curriculum Frameworks.
- 63% indicated that math curriculum is sequenced across grade levels and linked to the Essential Learnings/benchmarks.

Limited Staff Awareness of Washington State Standards. There was general agreement among administrators and MHC regional coordinators that teachers do not know the essential learnings in math. While a few teachers reported being very familiar with the EALRS, they did not feel this was universal within their school. Teachers often reported that they did know the interplay between the EALRs, frameworks and benchmarks, and many did not know the content or process strands. In addition, teachers reported that they were not using the EALRs to align their lessons, nor was there enough time in the school year to develop lessons to cover all the content strands. Adding to the confusion, many reported that their district’s “learning targets were fuzzy” and often inconsistent with state standards. These interview results verify *SIPADS* indicating that teachers lack familiarity with the EALRs and math content strands.

- 19% indicated that the team is very familiar with the Math EALRs and the Benchmark Indicators.
- 21% indicated that the team understands the Math EALRs and Benchmarks very well and uses them for planning math lessons.
- 32% indicated that they have the knowledge of and use the mathematical foundation and concepts underlying probability and statistics.
- 38% indicated that they have the knowledge of and use the mathematical foundation and concepts underlying algebraic sense.
- 48% indicated that they have the knowledge of and use the mathematical foundation and concepts underlying geometric sense.
- 48% indicated that they have the knowledge of and use multiple math communication strategies.
- 48% indicated that they have knowledge of and use problem solving strategies to assist students in learning to analyze and solve complex, multiple-step problems.
- 52% indicated that they have knowledge of and use the mathematical foundation and concepts underlying measurement.
- 59% indicated that they have knowledge of and use the mathematical foundation and concepts underlying number sense.

Limited Professional Development. Professional development was an issue in some schools because many teachers were not attending trainings. For example, one principal reported that she had a teacher on staff who had not attended any professional development trainings for eight years. Consequently, many teachers were continuing to use a “drill and practice” methodology rather than shifting to a constructivist approach, in part, because they lack confidence in teaching the new methods and have not received adequate training. In many schools, a dichotomy developed between those teachers using traditional methods and textbooks

and those who are trying to shift their teaching to a constructivist approach. This lack of consistency resulted in students being moved back and forth between the two math programs in an ad hoc manner as they advance through the grade levels, and has caused confusion for both the teachers and the students. Teachers indicated that they would like to receive training to develop a common methodology and a common vocabulary, but they acknowledged this would be difficult for everyone on staff to accept, particularly when some believe it is not necessary. One person said, “Change is difficult. But when you believe what you [have been] doing is right, change is even harder.” Another said, “Professional development is poor and many veteran’s don’t want to change. We need to be reminded that things change.” Survey results reflect this dichotomy and show that many teachers are continuing to use traditional methodology.

- 38% indicated that instruction includes performance tasks, where students are actively engaged in learning activities that are based in real world applications.
- 39% indicated instructional strategies encourage students to engage in discussions.
- 41% indicated that mathematics instruction incorporates writing.
- 44% indicated that instructional strategies include questioning related to estimation, prediction, and evaluation of mathematical problems.
- 56% indicated that math instruction incorporates tasks for learning computation and formulating accurate responses.
- 62% indicated that math instruction includes the use of tools to assist in solving challenging problems (calculator, manipulatives, etc.).
- 66% indicated that math instruction incorporates time for both individual and group work.

Limited Collaboration among Teachers. Teachers and leadership recognized that there was not a “collaborative culture” in many of the schools. Collaboration was often described as poor within grade levels, across grade levels, and between administration and teachers. Many teachers were content working autonomously. In some cases, collaboration was not occurring due to time limitations. However, at other schools, collaboration was not occurring due to personality differences and a lack of trust between people. Teacher responses on the *School Indicators Rating* also reflect teachers’ perception of a need for more collaboration (see Figure 1).

Low Expectations for Students. Many teachers reported that they were not accustomed to working with some of the challenges their students faced. The issues cited ranged from an increase in poverty and transient students, to the challenges of working with a predominately Native American population and limited parental support. Some of the teachers reported needing extra assistance working with the challenges of their student populations, whereas others believed that the standards were too high for their students. Although some of the teachers were optimistic and made comments indicating a need to further challenge these students: “Our children need everything they can get; We need to believe they can succeed despite being poor;” “Our biggest need is believing these kids can learn and not give them excuses;” and “We are no longer being nice to the poor kids;” others were more pessimistic and blamed the students: “The problem at this point is the kids. They don’t know how to work cooperatively together, take

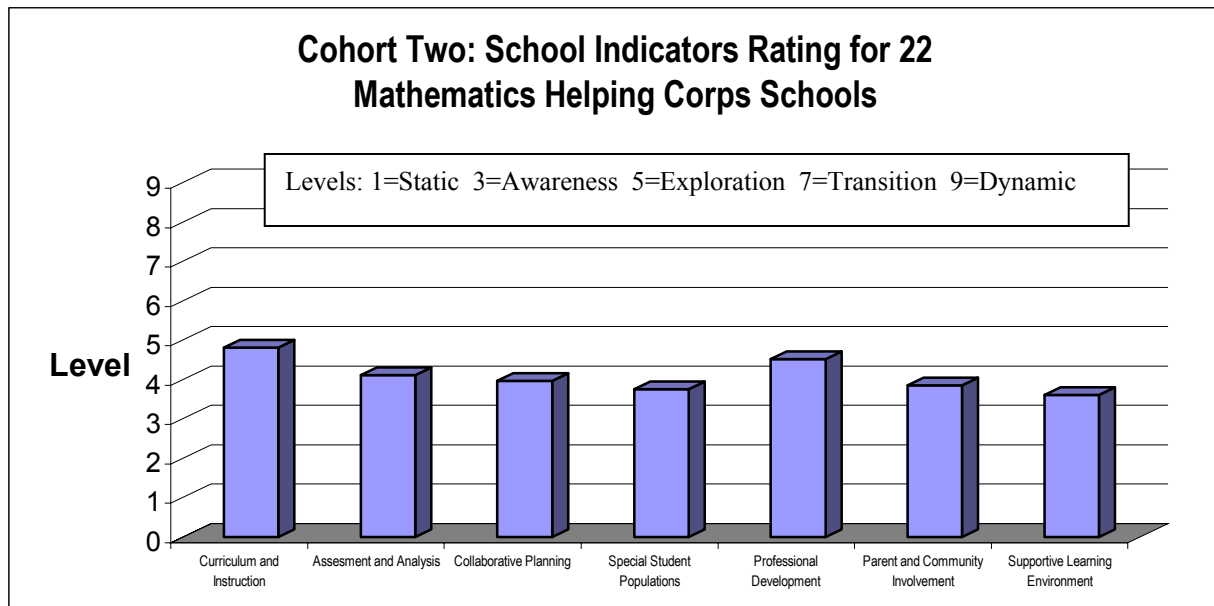
initiative . . .” The interview results are consistent with teacher survey findings indicating low to moderate expectations for their students.

- 12% indicated that students are given time, and skills are developed to set personal learning goals and reflect on learning.
- 27% indicated that instructional strategies in math incorporate accommodations for diverse learners (i.e., ESL, special education, gifted, etc.)
- 28% indicated that math instruction is planned to match the needs of all students, and is based on information about each student’s academic performance or about each student’s academic performances.
- 46% indicated that instruction engages students in challenging mathematics activities.
- 52% indicated that instruction includes re-teaching, cased upon assessment results.

School Indicators Rating Results. In addition to the *School Improvement Plan and Professional Development Survey*, teachers also completed the *School Indicators Rating* to identify school needs. This survey provides baseline information about the school in the areas of Curriculum and Instruction, Classroom Assessment, Collaborative Planning, Special Student Populations, Professional Development, and Family/Community Involvement. Teachers were asked to indicate which level best describes their current school situation. The results of the 2001 baseline findings are presented in Figure 1. These results show an average for all the schools, but there were variations in teachers’ perceptions both within and among schools.

The results from the interviews, two surveys and MHC regional coordinator monthly reports are consistent and indicate that the schools have a variety of needs. The needs identified in these schools are in direct contrast to effective school research in the previous section, and may provide insight as to why the schools are not meeting the state math standards.

Figure 1



Activities and Strategies for Cohort One and Cohort Two

Interviews with the MHC regional coordinator, administrators and teachers, and review of the MHC regional coordinator monthly reports provided information about the activities during the 2001 – 2002 school year. The MHC regional coordinator was assigned to schools to provide the following types of assistance.

- Analysis of student performance data and development of mathematics improvement plans based on the data
- Identification and implementation of research-based instructional strategies proven effective in improving student performances in mathematics
- Staff development on mathematics content knowledge, research-based instructional strategies, and classroom assessments
- Development and implementation of family and community programs emphasizing mathematics
- Other flexible, customized assistance intended to improve student learning of mathematics

The activities in the schools varied between Cohort One and Cohort Two schools, and also varied by the individual needs of each school. Despite the differences, there were a number of common activities in the schools.

Cohort One: Information about activities and strategies for Cohort One was provided by four of the six MHC regional coordinators that worked with Cohort One schools and are now working with Cohort Two schools. The MHC regional coordinators are allotted up to two days per month to provide follow-up for Cohort One schools. The extent to which the regional coordinators follow-up with the schools varies greatly with some using the entire two days per month at some schools, and other schools receiving little or no follow-up. The following activities are those that are most common in the Cohort One schools.

In-service training. In-service training is a strategy used by all of the MHC regional coordinators that were interviewed. The coordinators are able to efficiently use this time and impact more people. The regional coordinator has provided training during regularly scheduled meetings, during Learning Improvement Days (LID) and during release days. Some of the in-service training provided has been on team building, curriculum mapping, and the content and process strands.

Provide resources. All the MHC regional coordinators that were interviewed indicated that they continue to supply school personnel with resources. They provide the principals, math leaders and teachers with consultation during meetings and through email. In addition, they routinely supply school personnel with updated resources related to math and send the school information about math conferences.

Model lessons and observations. Most of the MHC regional coordinators have continued to demonstrate model lessons for the teachers and conduct observations and feedback for a few teachers. Since their time is limited in the schools, teachers that have a specific need and sign up

in advance are receiving this assistance as well as new teachers. One person described the time spent with the new teachers as beneficial because it “lets them know the vision and focus.”

Family math night assistance. Many of the MHC regional coordinators have continued to provide assistance and consultation to the schools for family math night. While they are no longer assuming direct responsibility for the event, they are supporting the math leaders.

Cohort Two: Extensive interviews were conducted with all the MHC regional coordinators and principals and teachers from 20 schools. MHC regional coordinators spend two to three days a week in their schools depending on whether they are working with Cohort One schools, and the time they spend on their own professional development activities. The following are activities most commonly employed in Cohort Two schools.

Building trust and relationships. Building trust and relationships with the teachers was the first task for the MHC regional coordinator. The amount of time spent on this task and the level of initial support varied between the schools, and after Year One, there were still some struggles with trust in some schools. Schools that supported the grant more readily accepted the regional coordinator, whereas schools that did not fully support the grant or understand the intentions were less accepting of the coordinator. In addition, teachers that were familiar with the regional coordinator prior to receiving the grant generally were more supportive. Some of the strategies the regional coordinator used to build trust were explaining the program during staff meetings, being visible around the school, and offering teachers support with a variety of tasks. Teachers often mentioned that the fact that the regional coordinator was a certificated teacher added to his or her “credibility.” Teachers also believed that particular personality characteristics and professionalism increased staff level support.

In-service training. Providing school personnel with information on the Essential Learnings, and helping teachers understand the content and process strands were described as the “foundation of what the regional coordinators do.” In-service training has been one strategy for providing this information. This training has occurred during workshops developed by the regional coordinator, during LID days and during release days. In these classes, teachers have studied the EALRs, frameworks and benchmarks in depth; discussed strategies to cover the content and process strands; discussed best practices and constructivist teaching strategies; looked at sample math WASL questions and the scoring method; and received math resources. Attendance at these classes have been mixed with 100% attendance at some schools, and no teachers from another school attending a 10-hour course designed by the coordinator. Teachers that attend these classes report that they are very helpful and provide practical strategies the teachers can use in the classroom. Teachers that do not attend report that the classes last too long, they are not paid to attend, and they are busy with other activities.

Aligning and articulating the curriculum. Building upon the teachers knowledge of the Essential Learnings, the MHC regional coordinator is also working with teachers to align the curriculum to the EALRS. The coordinators have been working with grade-level teams to collaboratively align the curriculum by grade level with the frameworks and benchmarks, ensuring that all content and process strands are covered. Work is also being conducted with the Math Leadership Teams and across grade levels to ensure articulation. Because of this work,

teachers report they are becoming more focused, realizing they can skip over some areas in their adopted curriculum and may need to supplement others.

Model lessons and observations. The MHC regional coordinators also provide teachers new strategies and techniques for teaching, and they spend a considerable amount of time in the classroom. During Year One, this has predominately consisted of model lessons, in which a teacher will sign up for a particular lesson in an area they are struggling with. Typically, the coordinator will have pre-conference with the teacher to identify the needs and a reflective conversation after the lesson. The regional coordinator also participates in team-teaching and conducts observations with some of the teachers. Many teachers have found this work beneficial and discussions about peer-coaching have ensued. There is hope that during Year Two, teachers will feel comfortable observing one another while the regional coordinator covers their classes.

Family and community programs. In keeping with the vision of the Math Helping Corps program, the regional coordinators have worked with the school, with the community and with parents to instill “delight” in mathematics. Some of the activities have included a school-wide problem of the week, a math club and family night. In some cases, parents and community members are volunteering on a consistent basis for these events. Principals and teachers have been surprised with the response of parents in schools that traditionally have not had much parental support.

Providing resources. Personnel at many of the schools reported that they lacked resources in mathematics, and very few teachers were attending math conferences. The regional coordinator has been instrumental in addressing this issue by providing staff with research articles and books, such as “the Van de Walle book.” They have also helped inventory the manipulatives, develop a math closet and assist teachers and administrators in identifying actual needs. In addition, the regional coordinator invites teachers to math conferences and encourages them to share the information with the staff. The materials and resources that the MHC regional coordinator has supplied have made a big impression on many staff members.

District level consultation. Some of the regional coordinators have been involved in district meetings to discuss issues of curriculum alignment across schools. They also help to clarify discrepancies between the district frameworks and the state standards.

Challenges and Concerns

MHC Regional Coordinators: The MHC regional coordinators faced several challenges during the first year of the program. In some cases, these challenges have continued to interfere with the work, and in others, the culture of the school is beginning to change and the challenges are less evident.

Lack of teacher buy-in. Lack of teacher buy-in was clearly evident in some schools. Two issues were mentioned most often as the reason for the lack of buy-in: (1) teachers were not involved in the grant application and did not fully understand what the MHC program entailed; and (2) teachers did not believe they could benefit from the program. As time went on most of these issues resolved, however, several MHC regional coordinators reported only moderate

support at some schools. In instances where these issues were resolved, staff members acknowledged their misperceptions and were thankful for the program. One teacher who initially did not support the program said, “To be honest, I signed up because I wanted a break. But then I saw it work. Now I like it.”

Administrative changes. While every principal interviewed acknowledged support of the program and provided evidence of support by funding substitute teachers for release days, giving the regional coordinator time at meetings, and using a math lesson as a part of their evaluation with the teachers, there were some differences. The differences largely appeared to be due to the many administrative changes that occurred in the schools. In some cases, the principal that applied for the grant was no longer there when the MHC regional coordinator arrived at the school, and other changes occurred mid-year. This appeared to impact the program in three ways: (1) the new principal was often focused on *literacy* and seemed less interested in math improvement; (2) the new principal did not fully understand the program and the regional coordinator had to spend valuable time addressing several issues; and (3) the culture of the school changed with less of a focus in mathematics while staff adjusted to the change. In addition, some of the regional coordinators working with Cohort One schools reported more difficulty with follow-up after an administrative change, and in one case the coordinator was no longer working with that school.

Resistance to change. In nearly every building, there were a couple of teachers who felt their mathematical skills were adequate and did not see the need to use the assistance of the MHC regional coordinator. Some teachers, who felt their knowledge was adequate, did not feel challenged by the workshops and believed the time spent with the coordinator was not valuable. Others were math leaders that felt threatened by having a “math expert” in the building. For example, one math leader who was described as “traditional” by the principal said, “Being in the leadership position, I’m already aware of teaching strategies in math. Everything [the regional coordinator] has done, I already do.”

In addition to teachers feeling comfortable with their abilities, many believed the current reform effort was “a fad” that would go away in a few years. The coordinators used words such as “entrenchment” and “resistance to change” to describe their staff members. One person said, “Many believe constructivism, reform and the EALRs will go away.” Adding to resistance, many teachers indicated that the WASL was the responsibility of the fourth and seventh grades, and few teachers from other grades were accepting responsibility. One fourth grade teacher said, “I feel the fourth grade takes all the stress.” A seventh grade teacher described “finger-pointing” when the WASL scores came out. Consequently, there were often staff changes at these grade levels, particularly the fourth grade.

Inadequate math focus. Some of the elementary teachers reported that math was the area they were least comfortable teaching. One teacher said, “I think there is a math fear among teachers.” In addition, some schools implemented a school-wide reading program leaving little time for math instruction, and at other schools administration focused on literacy. Consequently, there was limited time in the day for math instruction. Some teachers devoted less time for math instruction in the classroom, and a few indicated they rarely taught math.

Tension among staff members. In a number of schools, there were reports of tension and mistrust among staff members, with very little communication and collaboration occurring within or across grade levels. Consequently, teachers did not share ideas, resources or information. Also, due to the personality issues, it was difficult for the MHC regional coordinators to hold meetings and have every teacher attend. One person said, “People don’t work together. They just don’t like each other.”

Demands of being at four schools. The regional coordinators that were also working with Cohort One schools found it challenging to balance the needs of four schools. They reported feeling “overwhelmed” at times, and some spent additional time in the evenings trying to catch up with emails and paperwork. The coordinators did acknowledge that the extra days at the Cohort One schools are helpful for sustainability, and they felt the teachers “used the time well.”

Administrators and Teachers: The concerns raised by administrators and teachers in Cohort Two were identical to those identified by Cohort One and described by Fouts and Stuen (2000) in their MHC Year 1 Interim Report.

Application timeline and information. Administrators and teachers reported they did not have enough time to fully review grant responsibilities and generate full staff buy-in. In most cases, a principal and a few teachers, or the leadership team took on the responsibility of writing the MHC grant application. While teachers knew about the grant and reported it was mentioned during a staff meeting; few felt fully informed. There were reports of lack of staff buy-in because of the short timeline and the application process. One person said, “They need to tighten up the application process to make sure everyone wants the grant.”

Absences of MHC regional coordinator. School personnel often reported frustration at the frequent absences of the MHC regional coordinator due to conferences and meetings. Teachers at all schools felt that more consistency would improve the MHC program. Teachers made the following comments: “We need [the regional coordinator] full time. That would make an incredible difference.” “She is gone for frequent trainings. Sometimes she is not around when we have questions.” and “We need to have her here more. She is busy and all over the place.”

Questions of sustainability. Several people wondered whether two years was enough time to sustain the changes that have been made. Teachers reported that the first year was devoted to establishing trust and buy-in and the real work did not begin until the second year of the program. They suggested that a third year would allow teachers to institutionalize the change and develop leadership. One person summed up the concerns saying, “Without someone here, we may revert back to old ways...we are not sure how to sustain and support each other.”

MATH HELPING CORPS SCHOOLS ACHIEVEMENT DATA

The goal of the interim report is to provide formative feedback for MHC staff and school personnel, to establish baseline data on student achievement for Cohort Two and to track general progress of Cohort One and Cohort Two schools. Summative findings and detailed data analysis will be the focus of the final report in November 2003.

Achievement data from the third and sixth grade ITBS, and the fourth and seventh grade WASL were reviewed and analyzed to determine the progress Cohort Two schools made in mathematics. Each of the two cohorts has its own calculated comparison group.⁴ Scores from each cohort are compared to a group of schools that is similar to the MHC cohort schools in enrollment (number of students), ethnicity (percent non-white), and poverty (percentage of students receiving free and reduced lunch). There were 528 schools for Cohort One (see Fouts & Brown, 2001). There were 470 elementary comparison schools for Cohort Two and 114 middle school comparison schools for Cohort Two. Details about the range and average characteristics for both cohorts and various comparison groups are provided in Appendix B. Average enrollment, ethnicity and poverty characteristics for Cohort Two schools and their respective comparison schools are shown in Table 2.

Table 2

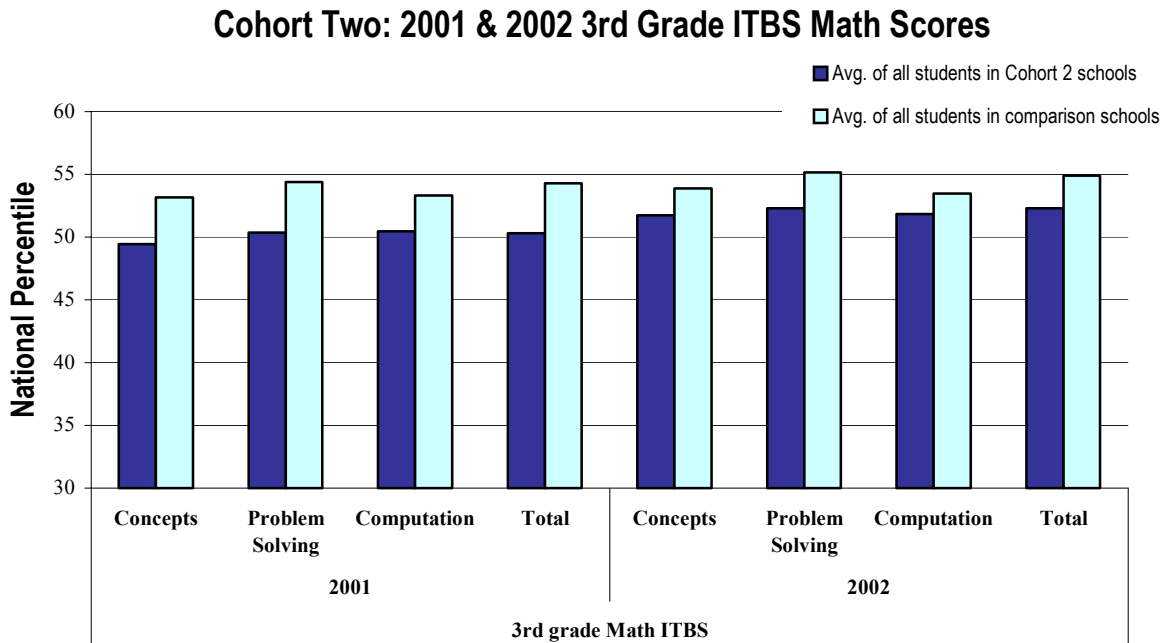
Cohort Two – Elementary Schools		
	Comparison Schools	MHC Schools
Average Enrollment	440	437
Average Ethnicity (% non-white)	32%	40%
Average Free / Reduced Lunch	50%	58%
Cohort Two – Middle Schools		
	Comparison Schools	MHC Schools
Average Enrollment	522	632
Average Ethnicity (% non-white)	28%	42%
Average Free / Reduced Lunch	44%	50%

⁴ Comparison groups for each cohort were calculated using student enrollment, ethnicity, and poverty as key factors. The range for each of these factors was calculated, and schools within the state of Washington that fell within these ranges were included in the comparison groups. Means were also calculated for each group. Details for both cohorts are included in Appendix B.

3rd Grade 2001 and 2002 ITBS Math Scores

The 2001 and 2002 ITBS third grade math scores show that Cohort Two MHC schools made gains in all areas of math, while the comparison group remained relatively stable over the year. The average percentile gain for Cohort Two schools was about 2%iles, while the comparison group made gains of less than 1%ile in all areas. This trend is slight, but it should be followed into the next year to see if it continues and to determine if the changes after two years are statistically significant. The third grade 2001 and 2002 ITBS math scores are shown by sub-category in Figure 2.

Figure 2



4th Grade 2001 and 2002 WASL Math Results

The 2001 mean passing rate for Cohort Two elementary schools on the fourth grade math WASL was 25.3% and considerably lower than the state mean passing rate at 43.4%, and the mean passing rate for the comparison schools at 37.2%. The passing rate for the Cohort Two schools increased by 14.5% in 2002, while the passing rate increased by only 8% to 9% for the state and comparison group, indicating faster improvement in the MHC schools (see Figure 3). The mean percent passing in 2002 Cohort Two MHC schools was 39.8% with all schools, except one, showing improvement after receiving treatment. The change in percent passing ranged from -5.6% to 36.3% (see Figure 4). Overall gain scores are evident by looking at the four levels on the WASL. Schools reduced the percent of students in level 1 by 14%, and they increased the number in level 3 by 8.5%. The 2001 and 2002 fourth grade math WASL results by level are shown in Figure 5.

Figure 3

Cohort Two: 4th Grade WASL Math

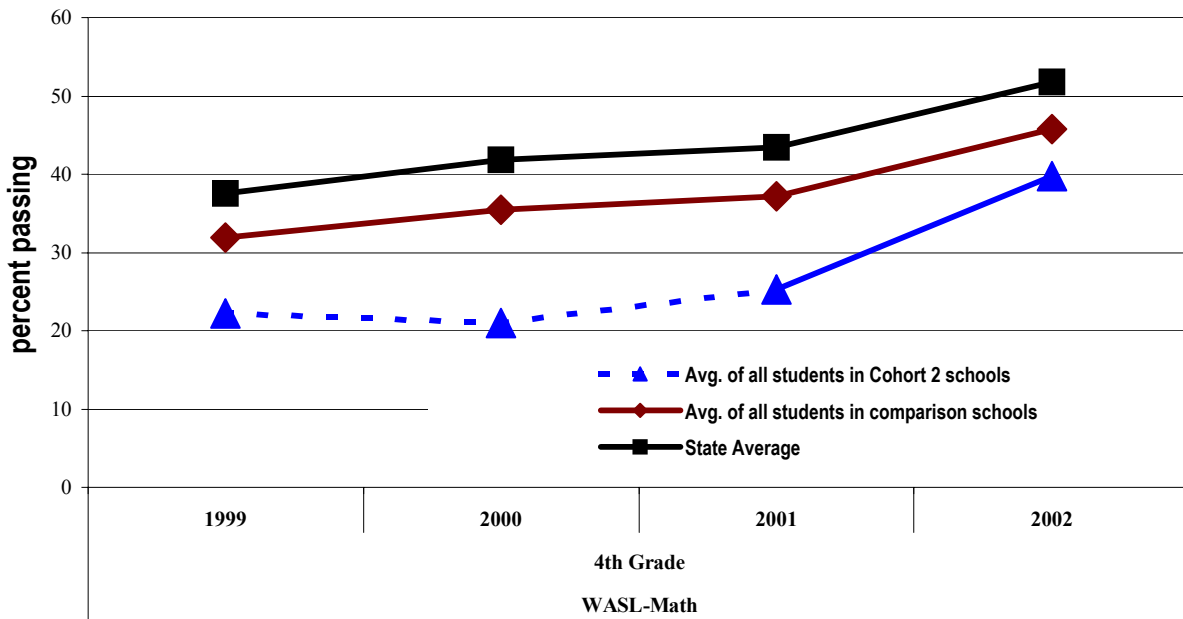


Figure 4

Cohort Two: 2001 & 2002 4th Grade WASL Math Results for 15 Elementary Schools

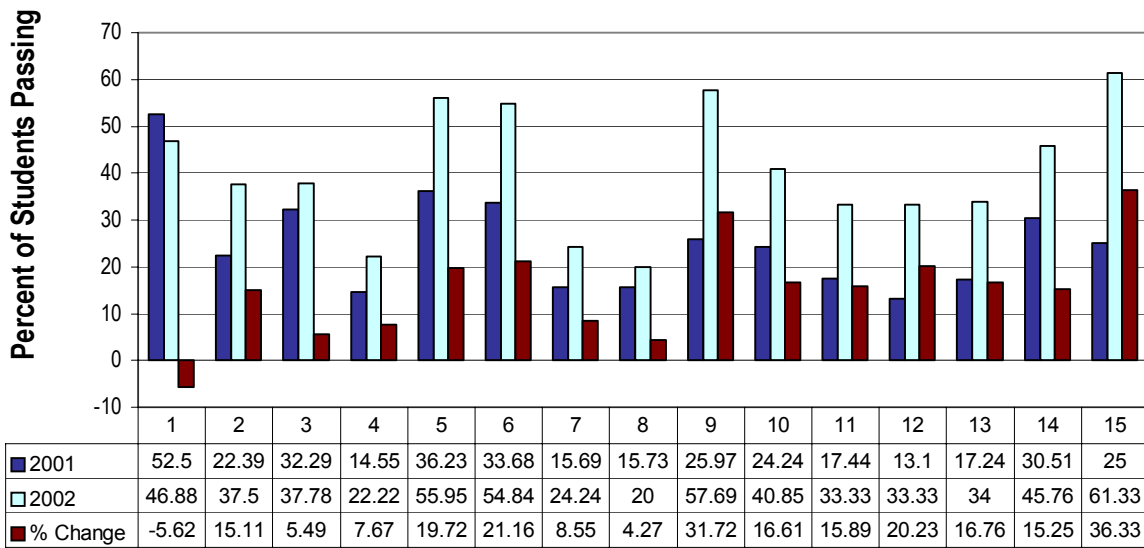
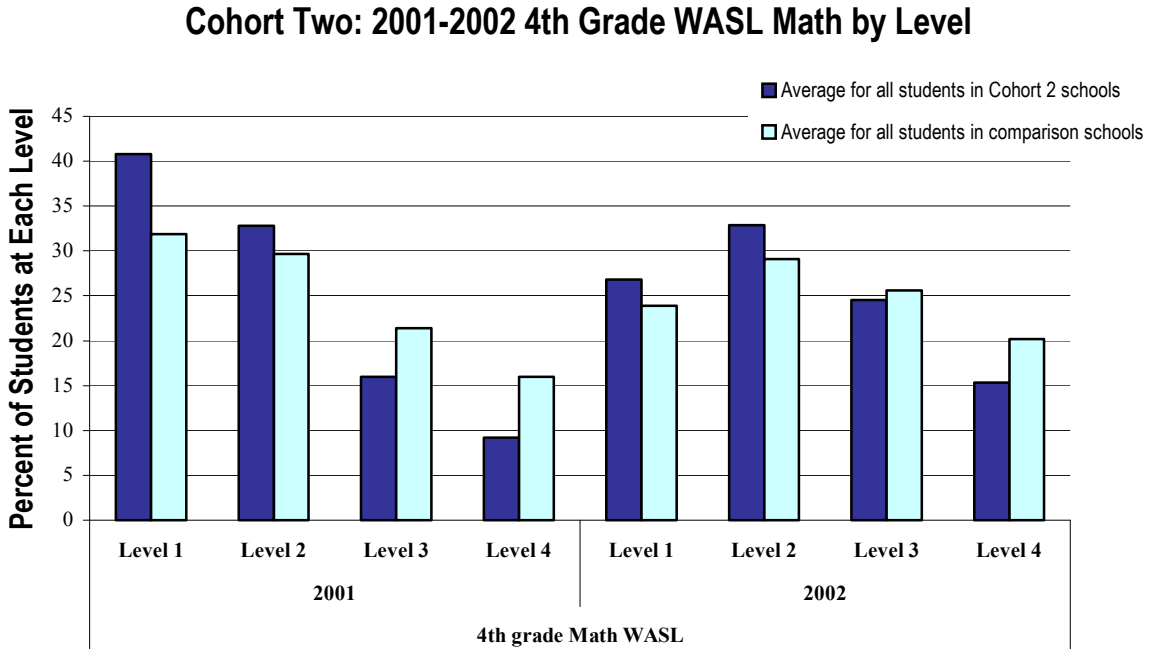


Figure 5

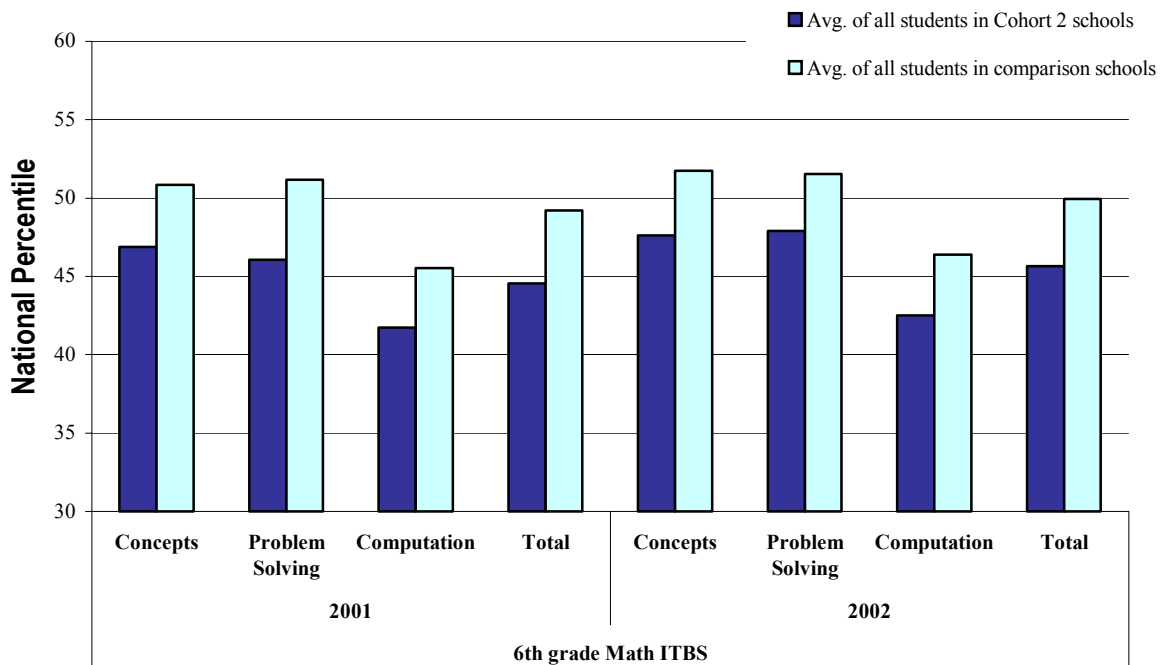


6th Grade 2001 and 2002 ITBS Math Scores

The 2001 and 2002 ITBS sixth grade math scores show that Cohort Two schools are considerably lower than the comparison group. Both Cohort Two schools and comparison schools made small gains in all sub-categories: *concepts*, *problem solving* and *computation*. Cohort Two schools made small gains of .7%, 1.9% and .8% respectively and at a consistent level to the comparison group (.9, .4 and .8% respectively). There was evidence that Cohort 2 schools improved in *problem solving*, which was an area of focus for most MHC regional coordinators, at a faster rate than the comparison group. The results are shown in Figure 6.

Figure 6

Cohort Two: 2001 & 2002 6th Grade ITBS Math Scores



7th Grade 2001 and 2002 WASL Math Results

The seven middle schools vary in some respects because two of the schools were awarded the grant in 2000 and have received two years of assistance, while the other five schools were awarded the grant in 2001 and have received one year of assistance. All the schools were performing below the state average on the seventh grade math WASL at the time of their application. The schools that applied in 2000 had a mean of 24.4% passing in comparison to the state mean of 28.2% and a comparison group mean of 23.3%. Likewise, the schools that applied in 2001 had a mean passing rate of 12.6% in comparison to the state mean of 27.4% and a comparison group mean of 22.8%. The passing rate for the schools that received the grant in 2000 (3-year schools)⁵ improved by 10.1% over the last two years, and both schools are now performing above state average. The remaining five schools (2-year schools) improved their passing rate by 6.1% since receiving the grant in 2001. These improvement rates for Cohort Two are above the state and comparison group averages of 3.0% to 2.9% respectively since 2001 (see Figure 7).

While middle schools, in general, have shown little growth in on the WASL math, Cohort Two middle schools have improved at a faster rate than the state and a comparison group. The cohort’s mean gain was 6.1% while the state gain was 3.0%. The comparison group likewise posted a 2.9% gain (see Figure 8).

⁵ 2-year schools & 3-year schools refers to the number of years the school will have been in the program at the end of the treatment, spring/summer 2003.

Figure 7

Cohort Two: 7th Grade WASL Math

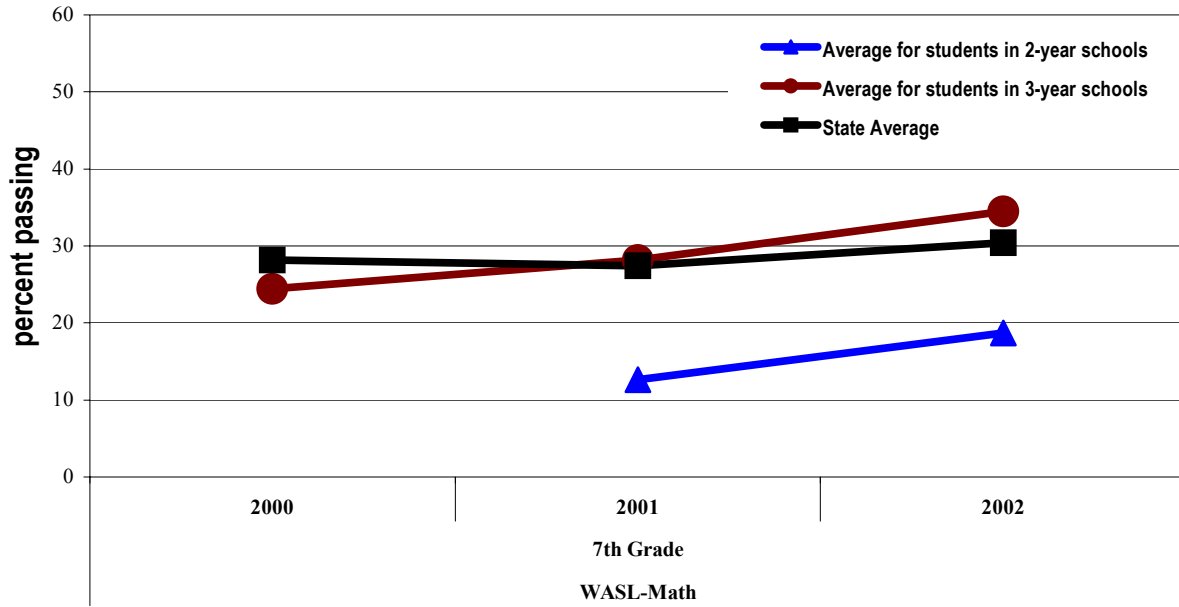
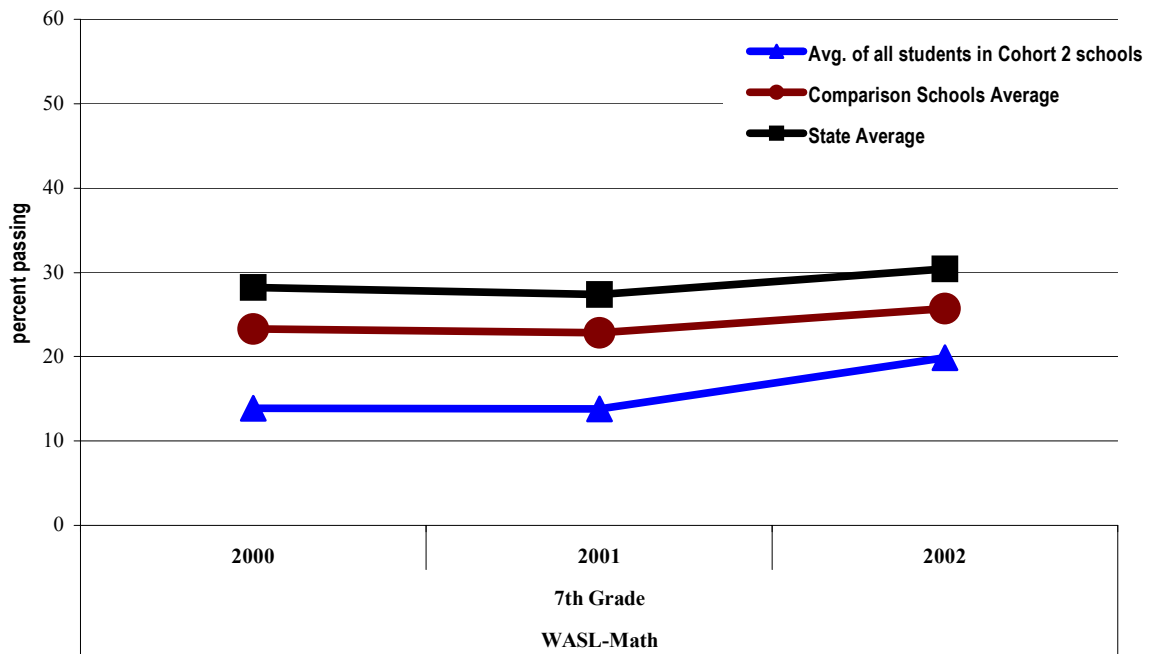


Figure 8

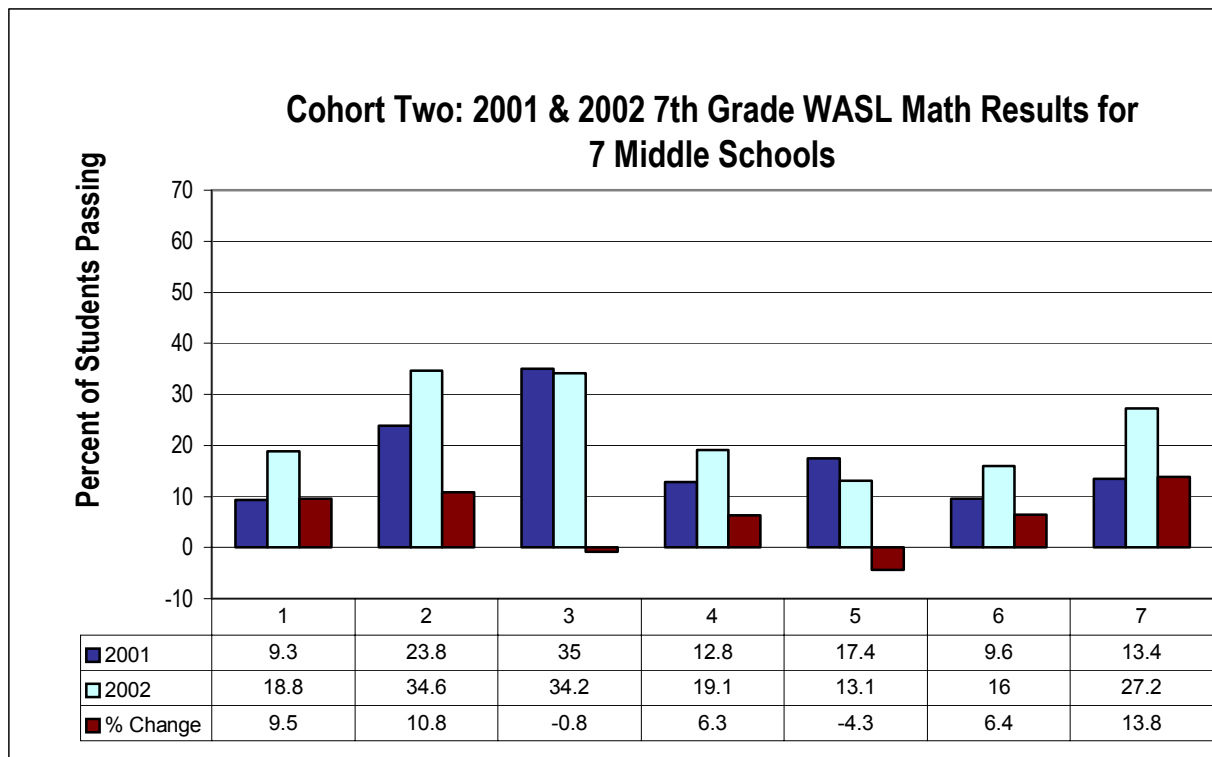
Cohort Two: 7th Grade WASL Math



All but one school has demonstrated improvement in the passing rate since receiving assistance.⁶ The change in percent passing since receiving MHC assistance ranges from -4.3% to 13.8%. The 2001 and 2002 math WASL results are shown in Figure 9.

The seventh grade WASL math mean gain for all Cohort Two middle schools was 6.1%. Most startling is the very large percentage of students at level 1 with very little change over the last year. Cohort Two schools decreased the number of students in level 1 by 7.4% and increased the number of students in level 3 (passing) by 2.7%. The comparison schools decreased the number of students in level 1 and increased the number of students in level 3 by 3.2% and 2.5% respectively (see Figure 10).

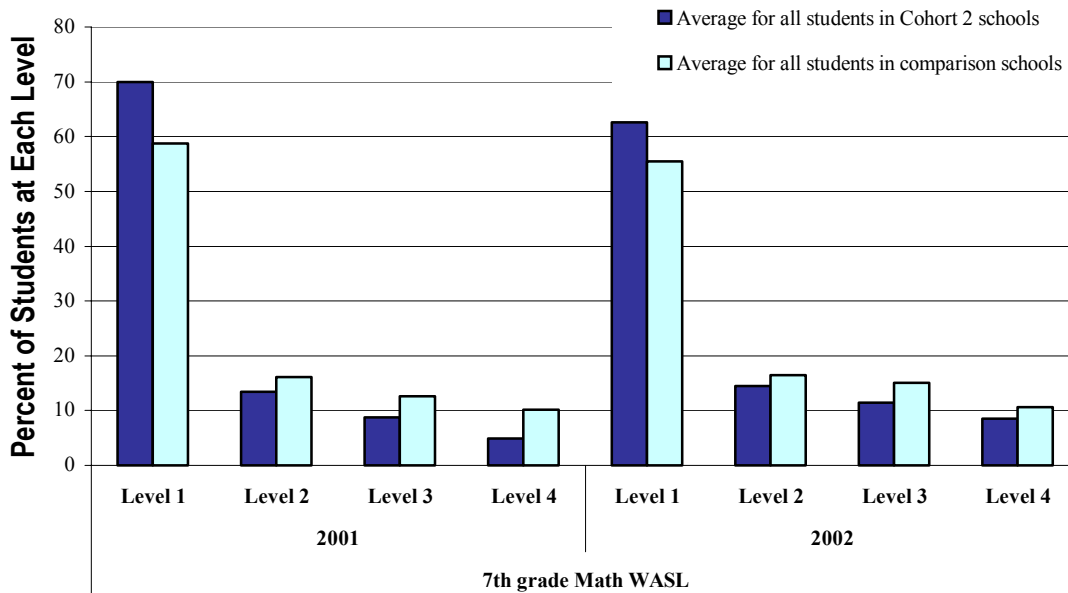
Figure 9



⁶ School number three in Figure 9 is a 3-year school. Although scores dipped by 0.8% between 2001 – 2002, overall gains since receiving assistance (2000 – 2002) have been 11.5%.

Figure 10

Cohort Two: 2001-2002 7th Grade WASL Math by Level

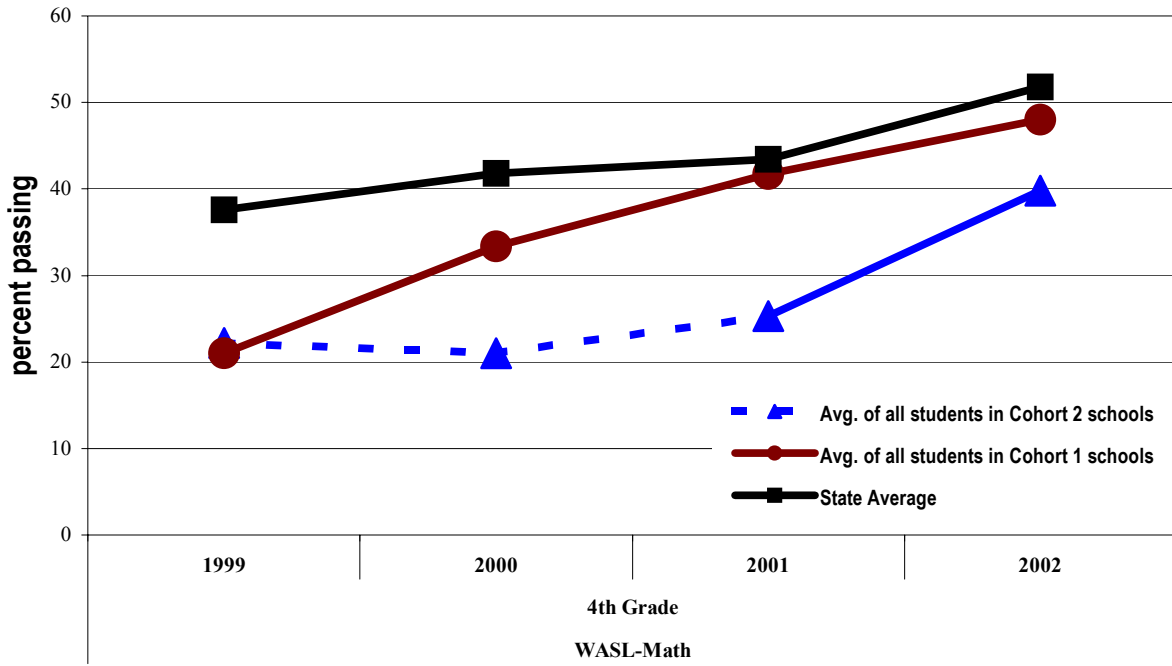


4th Grade WASL Math Passing Rates for Cohort One and Cohort Two

Cohort One and Cohort Two schools have demonstrated an improvement in passing rates since receiving assistance. Cohort One schools have gone from 21% passing to 48% passing, a gain of 27%. During the same period, the state improvement rate was 14.8%. Despite receiving limited assistance, 9 of 13 Cohort One schools have continued to improve in the percent of students passing. Likewise, as described above, Cohort Two schools have had gains in improvement rates beyond the state average. These data are encouraging findings that continue to suggest a positive impact of the MHC program. The passing rates for Cohort One and Cohort Two compared to the state average are shown in Figure 11.

Figure 11

Cohorts One & Two: 4th Grade Math WASL



SUMMARY AND RECOMMENDATIONS

The Mathematics Helping Corps program, established in 1999 by the Washington State Legislature, provides assistance to low performing elementary and middle/junior high schools to improve teaching and learning in mathematics. Since establishing the program, 38 schools have received assistance. The vision for the MHC program is “Expanding proficiency, excellence and delight in mathematics through carefully planned assistance to schools.” The intent was to develop a research-based model for school improvement that is replicable and continually modified based on evaluation data.

The design used for this evaluation focused on six areas of inquiry:

1. What type of assistance was needed within the school?
2. What type of assistance was provided? (Strategies and Activities)
3. What was the effect of the assistance?
4. Did the type of assistance provided relate to increases in student achievement?
5. Was the assistance provided to Cohort Two effective?
6. Did Cohort One schools sustain gains made in the first two years of the MHC program?

Overall, 169 people from 20 Cohort Two schools participated in evaluation activities that included interviews with the principals, the MHC regional coordinators and teachers. In addition, data from other sources, including two surveys, ITBS and WASL results, and MHC regional coordinator monthly reports were analyzed and synthesized to provide information for the evaluation.

Personnel from Cohort Two schools reported needing assistance in a variety of areas. These areas included low student performance on the WASL, difficulties with curriculum implementation, limited staff awareness of Washington state standards, limited professional development opportunities, limited collaboration among teachers and low expectations for teachers. The needs identified in these schools verify they have been functioning in direct contrast to effective school research, and provide insight as to why the schools have not been meeting the standards.

The MHC regional coordinators have attempted to address the needs of the schools through a variety of activities that are within the scope of the MHC program. The coordinators are providing teachers with professional development opportunities through in-service training and model lessons, and consultation on curriculum articulation. In addition, they have started family and community programs and have provided resources to the schools. Some of the regional coordinators have also provided consultation to district level personnel about curriculum alignment. Throughout the process, the MHC regional coordinators have continued to build trust and relationships with school personnel.

Although the majority of the people are satisfied with the program, the MHC regional coordinators and school personnel raised several challenges and concerns. The challenges that the MHC regional coordinator faced in the first year included lack of teacher buy-in,

administrative changes, resistance to change and tension among staff members. In addition, the coordinators that are working with four schools found it difficult to address the needs at all the schools. School personnel raised concerns about the application process, indicating that the short timeline did not allow adequate staff buy-in. They also raised concerns about the frequent absences, and many believed that the program should be extended to three years in order to institutionalize change.

The ITBS and WASL results suggest that the MHC program has had a positive effect on student achievement. The improvement rates for passing the WASL in the fourth and seventh grades were higher in MHC schools than the state and a comparison group. In addition, Cohort One schools have continued to show improvement at a rate greater than the state. These trends will be studied further in the final report November 2003, to determine if they are significant and long lasting.

Recommendations

School personnel reported concerns about sustainability, and in some cases, teachers described dependence upon the MHC regional coordinator. During Year Two, begin to work on sustainability and building leadership within the school.

A number of leadership changes have occurred in the schools, and there are varying degrees of principal support. Consider supplying principals with ongoing information about the MHC program and information on strategies they can use to support the program.

School personnel indicated that the MHC regional coordinators were frequently absent due to professional meetings and trainings. Review the necessity of these meetings and consider limiting the meetings and training so the coordinators can increase the time in their schools.

Many administrators and teachers believe that a third year of support would improve sustainability and allow teachers to build leadership skills. Identify ways for the MHC regional coordinators to follow-up with Cohort Two schools.

Many teachers reported there would have been greater buy-in at the outset if they fully understood the program. If another cohort of schools is added to the MHC program, supply the schools with information about the grant well in advance of the application deadline. The information should outline the specifics of the MHC program, as well as the responsibilities of administration and teachers.

Schools that sought out the grant were generally more accepting of the MHC regional coordinator than schools that received unsolicited information. If another cohort of schools is added to the MHC program, spend additional time upfront with those schools that are recruited, to increase the likelihood of staff buy-in.

In some schools, the regional coordinator had to spend considerable time building trust and relationships with school personnel. If another cohort of schools is added, it may be helpful to

provide school personnel and the regional coordinator an opportunity to meet prior to being assigned to the school to determine if it would be a good fit.

Many indicated that Year One was spent building trust and relationships. If this process could begin a month or two earlier, perhaps the MHC coordinator would spend less time during Year One building relationships. Consider introducing the MHC regional coordinator to school personnel in the school year prior to receiving ongoing assistance.

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Appendix A

Interview Protocols for Math Helping Corps Cohort Two Schools.

Evaluators conducted interviews in Cohort 2 Math Helping Corps (MHC) schools to gather perceptions from principals, teachers, and the MHC regional coordinators related to the MHC program. Interviews were intended to be inductive in nature and allow for flexible questioning depending upon participant responses. The following protocol includes evaluation questions followed by a variety of probes. The evaluation focuses on the following questions:

1. What type of assistance was needed within the school?
2. What type of assistance was provided? (Strategies and Activities)
3. What was the effect of the assistance?
4. Did the type of assistance provided relate to increases in student achievement?
5. Was the assistance provided to Cohort Two effective?
6. Did Cohort One schools sustain gains made in the first two years of the MHC program?

Research Question 1 -- What type of assistance was needed within the school?

- What were the specific needs at your school?
- Who applied for the MHC grant? Why do you think they applied for the grant?

Research Question 2 -- What type of assistance was provided? (Strategies and Activities)

- How did the MHC regional coordinator transition into the system?
- Describe the reaction of the staff.
- Describe the level of staff buy-in for the MHC program.
- What strategies is the MHC regional coordinator using to meet the needs of your school? Which are the most helpful? Which are the least help?

Research Question 3 -- What was the effect of the assistance?

- Describe any changes you have seen as a result of the MHC program.
- What do you think will be the ultimate effect of the program?
- Are the changes sustainable? What are you doing to sustain the changes?

Research Question 4 -- Did the type of assistance provided relate to increases in student achievement?

- Describe any changes you have seen in student achievement. What do you think has caused these changes?

Research Question 5 -- Was the assistance provided to Cohort Two effective?

- What assistance has been the most effective? What has been the least effective?
- What recommendations would you make to improve the MHC program?

Research Question 6 -- Did Cohort One schools sustain gains made in the first two years of the MHC program?

- What activities and strategies are being used with Cohort One schools?
- Are Cohort One schools still supportive of the MHC program?

Appendix B

Cohort One and Cohort Two Schools: Calculation of Comparison Groups

528 schools in Cohort 1 comparison group
470 schools in Cohort 2 elementary comparison group
114 schools in Cohort 2 middle school comparison group

Cohort 1 Descriptives

Enrollment	441 (mean)	246-612 range
% F/R lunch	60% (mean)	39%-94% range
Pct White	62% (mean)	5%-91% range

Cohort 2 Elementary Descriptives

Enrollment	437 (mean)	248-649 range
% F/R lunch	58% (mean)	31%-79% range
Pct White	60% (mean)	10%-93% range

Cohort 2 Middle School Descriptives

Enrollment	632 (mean)	235-832 range
% F/R lunch	50% (mean)	29%-68% range
Pct White	58% (mean)	9%-92% range

Cohort 1 Comparison Schools Descriptives

Enrollment	442 (mean)	81-932 range
% F/R lunch	54% (mean)	14%-54% range
Pct White	62% (mean)	2%-97% range

Cohort 2 Elementary Comparison Schools Descriptives

Enrollment	440 (mean)	246-649 range
% F/R lunch	50% (mean)	30%-80% range
Pct White	68% (mean)	10%-95% range

Cohort 2 Middle Schools Comparison Schools Descriptives

Enrollment	522 (mean)	240-825 range
% F/R lunch	44% (mean)	29%-67% range
Pct White	72% (mean)	9%-92% range