

The K-12 Mathematics Curriculum Center  
at EDC

Cornerstone Claims

*Kasi Allen Fuller*  
*Mark St. John*  
*Pamela Tambe*  
*Tamara Evans*  
*Laurie Lopez*

March 2003

---

INVERNESS RESEARCH ASSOCIATES

## Background

From 1992 to 1997, the National Science Foundation (NSF) funded twelve curriculum development projects aimed at improving mathematics education for grades K-12: three at the elementary level, four at the middle school level, and five at the high school level.<sup>1</sup> The twelve new mathematics curricula that resulted were all designed to be “standards-based,” meaning that they would embody the vision of mathematics teaching and learning articulated in the National Council of Teachers of Mathematics’ *Curriculum and Evaluation Standards for School Mathematics* (1989). Beginning in 1997, the NSF offered further funding for a small group of dissemination and implementation centers that were given the challenging task of helping schools and districts across the nation learn about these innovative new programs and providing additional support for those who choose to implement them. The Education Development Center (EDC) received such funding from the National Science Foundation in 1997 and established the K-12 Mathematics Curriculum Center (K-12MCC). To date, this center remains the only math-focused implementation and dissemination center that supports all 12 NSF-funded curricula and all 13 grade levels K-12.

There are three other implementation centers whose goals closely align with those of the K-12 Mathematics Curriculum Center – one for each grade-level band.<sup>2</sup> Focusing on elementary is the ARC Center. At the middle school level, there is the Show Me Center. And the COMPASS Center serves secondary exclusively. The leaders of the K-12MCC work closely with each of these centers so that their efforts complement rather than compete with each other. This kind of collaboration also ensures minimal overlap across the four organizations, despite their common purposes. Over the years, the K-12MCC has developed a wide range of products and services aimed at supporting schools and districts throughout the process of curricular decision making and implementation. These fall into three major categories: national seminars, print materials, and support services – all of which combine to give their clients a collection

---

<sup>1</sup> Below is a list of the 12 curricula and the corresponding grade levels they target:

*Everyday Mathematics* (K-6)  
*Investigations in Number, Data, and Space* (K-5)  
*Math Trailblazers (TIMS)* (K-5)  
*Connected Mathematics* (6-8)  
*Mathematics in Context* (5-8)  
*MathScape: Seeing and Thinking Mathematically* (6-8)  
*MATHematics (STEM)* (6-8)  
*Contemporary Mathematics in Context (Core Plus)* (9-12)  
*Interactive Mathematics Program (IMP)* (9-12)  
*MATH Connections: A Secondary Mathematics Core Curriculum* (9-11)  
*Mathematics: Modeling Our World (ARISE)* (9-12)  
*SIMMS Integrated Mathematics: A Modeling Approach Using Technology* (9-12)

<sup>2</sup> For more information on the Curriculum Implementation Centers see [http://www.inverness-research.org/reports/ab\\_cic\\_reprt0602.html](http://www.inverness-research.org/reports/ab_cic_reprt0602.html)

of rich resources for making informed choices about the use of standards-based mathematics curricula in their individual settings.

## **This Report**

Inverness Research Associates is an independent educational research, consulting, and evaluation group that has served as the external evaluator to the Center since the fall of 2001. In this capacity, our work has focused on studying the overall impact of the Center's efforts, documenting how the K-12MCC's clients make use of its products and services, and advising the Center's leaders accordingly. While our association with the K-12MCC does not date back to its inception, we believe that our most recent evaluation work has put us in a strong position to draw some significant conclusions about how the Center is making a difference in the field of mathematics reform.

### *Evaluating the Center's Cornerstone Claims*

We have written the current report not as a comprehensive evaluation report, but as what we call a "cornerstone claims" report – namely a summary of what we see as the Center's key accomplishments according to those who have worked most closely with the Center in recent years and those who have been the direct recipients of its efforts. We have not made recommendations in this report, nor have we tried to report all the strengths and weaknesses of the Center. Rather, in documenting and articulating the "cornerstone claims" that follow, we at Inverness Research have viewed our work as a sort of audit of the investment that NSF has made in the Center. It is an opportunity for us to understand and assess the ways in which the Center brings benefits to districts, schools, teachers, and, ultimately, students. We believe that there should be a sound and explicit argument to be made for the investment in this and other Centers. And this argument should rest on a set of "cornerstone claims" grounded in evidence and data. We believe that the claims we document in this report are "cornerstones" in the sense that they collectively form the logic for the Center's work and bolster the argument that the Center is making a significant contribution to the capacity of the nation to improve math education.

The remainder of this report is organized around a discussion of the evaluation data and the collection of "cornerstone claims" that we believe the K-12MCC can now make, after more than five years of supporting the implementation of innovative K-12 mathematics curricula. Each claim is followed by a brief explanation that includes a synopsis of the evidence upon which the finding is based. The report concludes with a reflection on the future of the Center and a brief summary.

## Data Sources

In this report, like a lawyer making an argument, we have tried to provide the evidence that substantiates each of the cornerstone claims. This is a slightly different stance than the one we generally take as external evaluators. In this role we have two primary tasks: 1) helping to articulate the claims the project can now make, and 2) providing the evidence within our data set to verify each claim. The cornerstone claims that we present in this report stem largely, but not exclusively, from three data sources: a demographic analysis of the K-12MCC's client database as of June 2002, a comprehensive survey of seminar team leader participants, and a series of targeted interviews with long-term, experienced K-12MCC clients. Further details are provided below.

### CLIENT DATABASE

In the summer of 2002, the K-12MCC's database contained records for 3780 clients who had taken advantage of at least one of the center's available services. Members of the Inverness Research team analyzed the database, looking for trends according to geographic region, grade-level band, and profession.

### SURVEY

In June 2002, Inverness Research Associates designed and distributed a survey targeting former K-12MCC seminar participants. Because the K-12MCC encourages districts to send teams to seminars, we chose to survey the team leader from each district. The purpose of the survey was twofold: 1) to assess the current status and direction of participants' districts with respect to mathematics education, and 2) to determine the quality and usefulness of MCC seminars to the participants and their districts. We distributed a total of 249 surveys, of which we received 68 surveys, yielding a 27% response rate.<sup>3</sup>

### INTERVIEWS

In the spring and summer of 2002, Inverness Research Associates conducted 14 in-depth interviews with K-12MCC clients who had multiple experiences with the Center. We spoke with three groups of people. The first group was identified by the Center's leaders as clients having "extensive" or "long-term" interactions with the Center and its staff. The second group was selected by our evaluation team from a list of survey respondents who had expressed an interest in sharing their views on the K-12MCC in more detail. The third group was chosen from the K-12MCC client database to round out the interview pool - ensuring that we spoke to a representative range of clients. Each interview was approximately 45 minutes in length. They were transcribed and the transcripts analyzed for common themes.

---

<sup>3</sup> Because this survey was voluntary, we did not expect a higher return rate. We have no reason to believe that the responses are atypical.

## Cornerstone Claims

As indicated earlier, through its work over the past 5 years, the K-12MCC has served literally thousands of clients, ranging from classroom teachers to district administrators to university professors – all of whom approach the Center with the needs and nuances of their individual situation. Because of the Center’s highly diverse clientele, we have chosen not to discuss separately the impact on each of these different groups. Instead, the findings presented here cut across the various educational and professional categories – each derived from multiple data sources. The following is a list of the K-12MCC’s Cornerstone Claims:

### **K-12 MCC Cornerstone Claims**

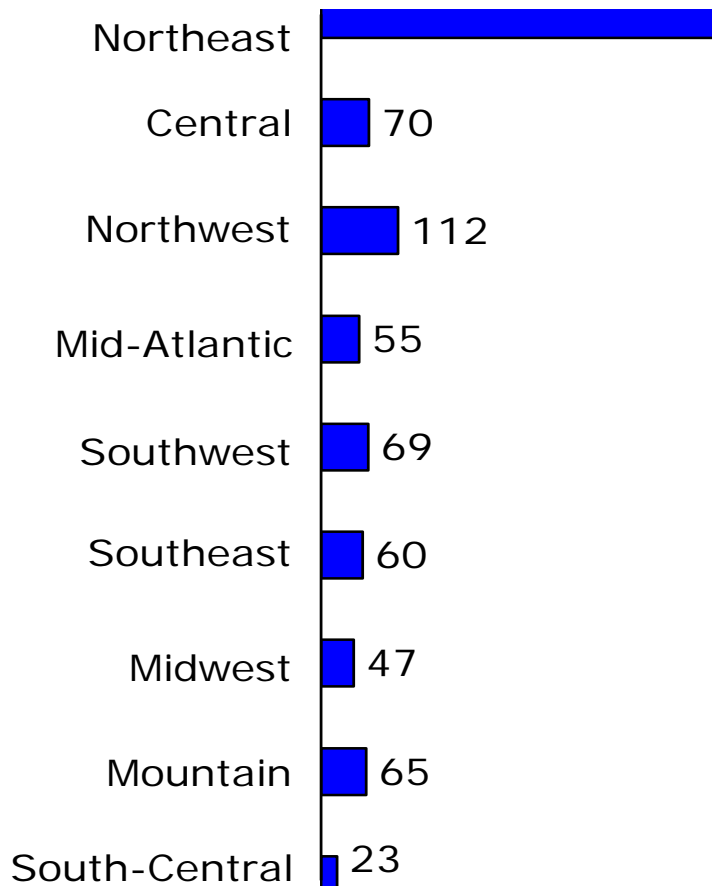
- CLAIM #1: The K-12MCC has achieved national reach, successfully serving schools and districts from all 50 states.
- CLAIM #2: The K-12MCC attracts a diverse clientele that is positioned to make effective use of what they learn through their interactions with the Center.
- CLAIM #3: The Center is perceived as an expert and objective resource in the field of K-12 mathematics education, offering a wide range of curricular supports, including products and services that can not be found elsewhere.
- CLAIM #4: The K-12MCC seminars are perceived as highly useful – not only meeting, but exceeding participant expectations.
- CLAIM #5: The K-12MCC has created a rich collection of written materials that clients view as highly valuable resources.
- CLAIM #6: The K-12MCC offers a range of additional support services that clients find very helpful in getting their individual needs met.
- CLAIM #7: The complete menu of seminars, resources, and supports offered by the K-12MCC contributes significantly to school and district efforts to improve their mathematics programs.
- CLAIM #8: Interactions between the K-12MCC and their clients have lasting impact, with participants returning for multiple experiences and often recommending the K-12MCC to others.

In this section, we discuss each Cornerstone Claim individually. The discussion includes a more detailed elaboration of the claim itself and the evidence from the external evaluation that supports it.

*CLAIM #1: The K-12MCC has achieved national reach, successfully serving schools and districts from all 50 states.*

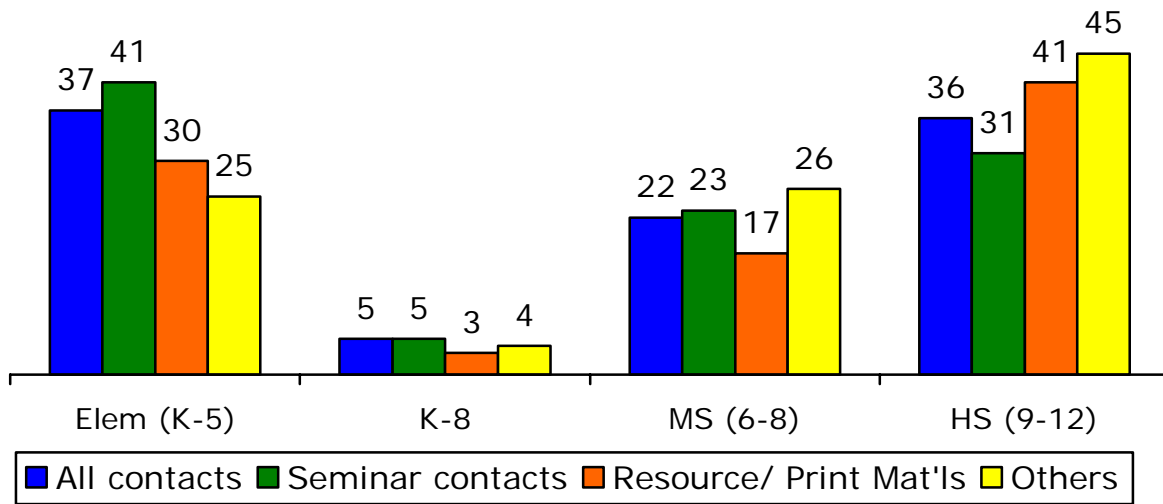
While the K-12MCC serves many districts in the Northeast, a combined analysis of the Center's contact database and the Inverness Research survey data indicates that the Center has interacted with schools and districts across the nation. In fact, according to the client database, the Center has provided services for almost 4,000 individual clients – representing nearly 1600 schools, 600 districts, and all 50 states. When we examined the contents of the client database using details available from the National Center for Educational Statistics (NCES), we found that about two-thirds of the schools and districts could be successfully matched with the list of NCES schools and districts. Figure 1 gives an indication of how the K-12MCC clients distribute across geographic regions according to the NCES categories.

---

**Figure 1. Number of K-12MCC school or district clients by region**

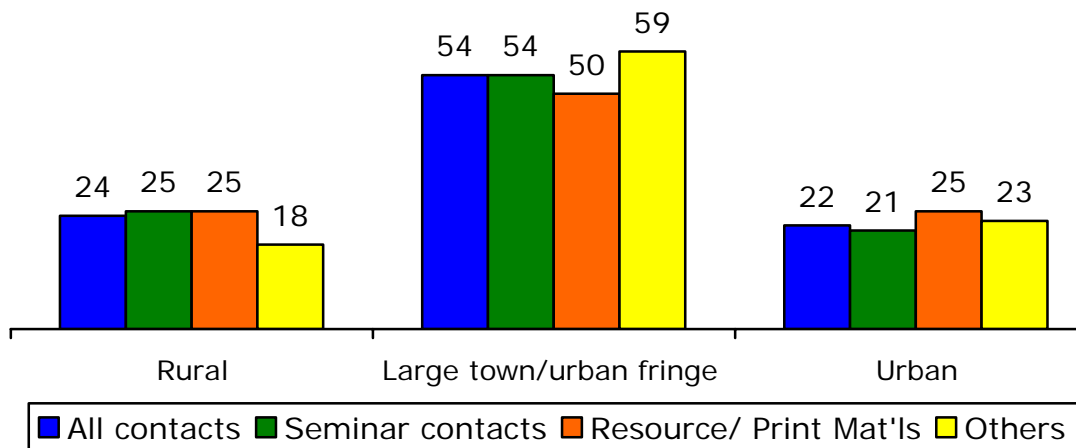
A more detailed breakdown of the contact database also reveals that the K-12MCC has served clients from all grade bands – elementary, middle, and high schools. Figure 2 shows how clients representing the different grade levels have chosen to use K-12MCC products and services. For example, the data indicate that across these groups more clients from the elementary level opted for seminars than they did other services, while more high school clients chose print materials.

**Figure 2. Percentage of K-12MCC contacts according to service provided and grade level**



In addition, these clients appear well distributed across a broad range of rural, urban and suburban areas with the majority residing in larger towns and urban fringe.

**Figure 3. Percentage of K-12MCC contacts by school locale**

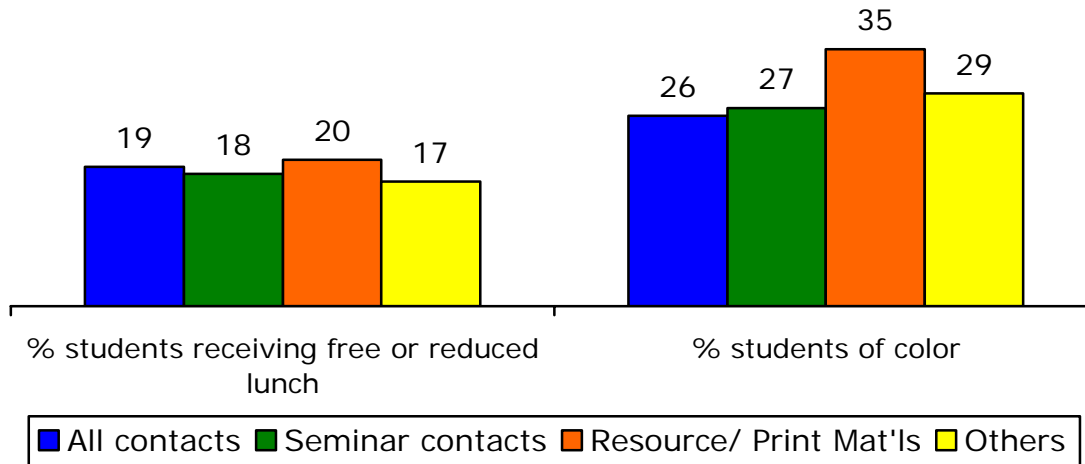


In terms of reaching out to schools and districts serving high-needs students, analysis of the K-12MCC database suggests that the Center is attracting some educators who work in areas with large populations of low-income and ethnic minority students. However, in the aggregate, the representation of low SES schools in the database is not quite enough to keep up with national averages. In the United States at present, 39% of public school students receive free or reduced lunch and 38% are students of color.



Figure 4 shows these averages for the K-12MCC clients according to the Center's database.

**Figure 4. Indicators of outreach to schools and districts serving high-needs students**



***CLAIM #2: The K-12MCC attracts a diverse clientele that is positioned to make effective use of what they learn through their interactions with the Center.***

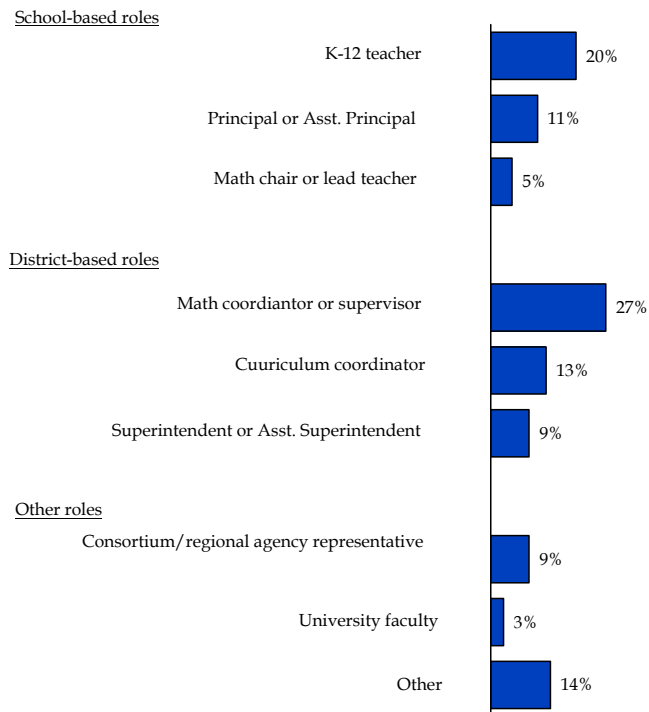
By recommending that participants attend K-12MCC seminars in teams, the Center has created a structure that promotes diversity with respect to professional roles among the attendees. The structure also contributes to participants' individual readiness to act on what they have learned by providing them with the support of local colleagues who have shared many of the same experiences. Survey and interviews respondents often alluded to the helpfulness of the team structure, particularly in terms of controlling costs and maintaining momentum when they returned home.

In addition, if we examine a breakdown of the team leaders who completed the participant survey, we see that this leadership group is especially well positioned to use what they have learned in their schools, districts, and beyond. Nearly half of the team leaders respondents (49%) hold district level positions, a third (36%) work at the school level, at least 12% are in positions that afford them opportunities to have an influence across district boundaries, and 14% have various other professional roles.<sup>4</sup> Nearly half

<sup>4</sup> Percentages exceed 100% because participants could check more than one role.

of the participants were either district math supervisors/coordinators (27%) or K-12 teachers (20%).

**Figure 5. Professional roles of team leader seminar participants**



***CLAIM #3: The Center is perceived as an expert and objective resource in the field of K-12 mathematics education, offering a wide range of curricular supports, including products and services that can not be found elsewhere.***

As educators consider issues of curriculum selection and implementation, they look to the K-12MCC as an independent third party, with in-depth knowledge of all 12 NSF-funded mathematics programs for the elementary, middle school, and high school levels. What we hear from clients is that, in addition to all that they know about the individual math programs, the K-12MCC staff has been quite masterful in their attempts to meet the individual needs of their diverse clientele. Part of this success comes from the creation of high quality written materials and seminars that have broad

appeal to such a wide audience. Another critical component is having people in place who recognize and value the complexities of K-12 mathematics reform. They are not promoting a “one-size-fits-all” approach to selecting and implementing innovative curriculum. The following quotes represent the responses of many:

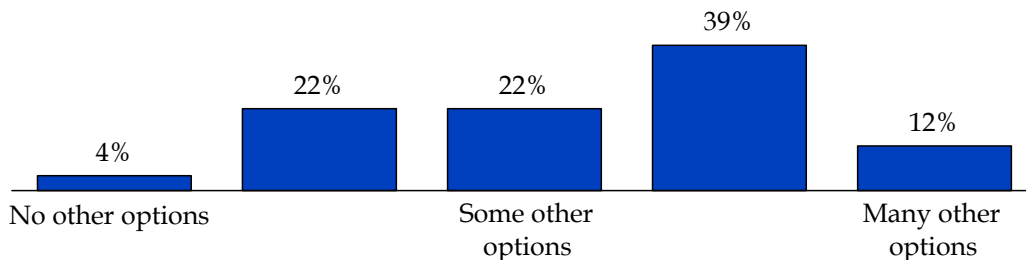
*The K-12MCC is an invaluable resource! They have a strong mathematical content knowledge paired with a knowledge of curriculum and implementation. They are a resource that I, as a math consultant, use constantly.*

*This is an outstanding resource team, I have gained a great deal of professional insight from my association with them.*

*The transition to standards-based materials is difficult under any circumstances but the staff of MCC K-12 made all the difference. The consulting and seminars put district leaders in touch with other districts engaged in similar endeavors and provided a network of support.*

When we asked survey respondents about the uniqueness of the services provided by the K-12MCC, about half (51%) report that they indeed have other options for receiving the similar kinds of information and support.<sup>5</sup>

**Figure 6. Extent to which clients have other options for similar information and support**



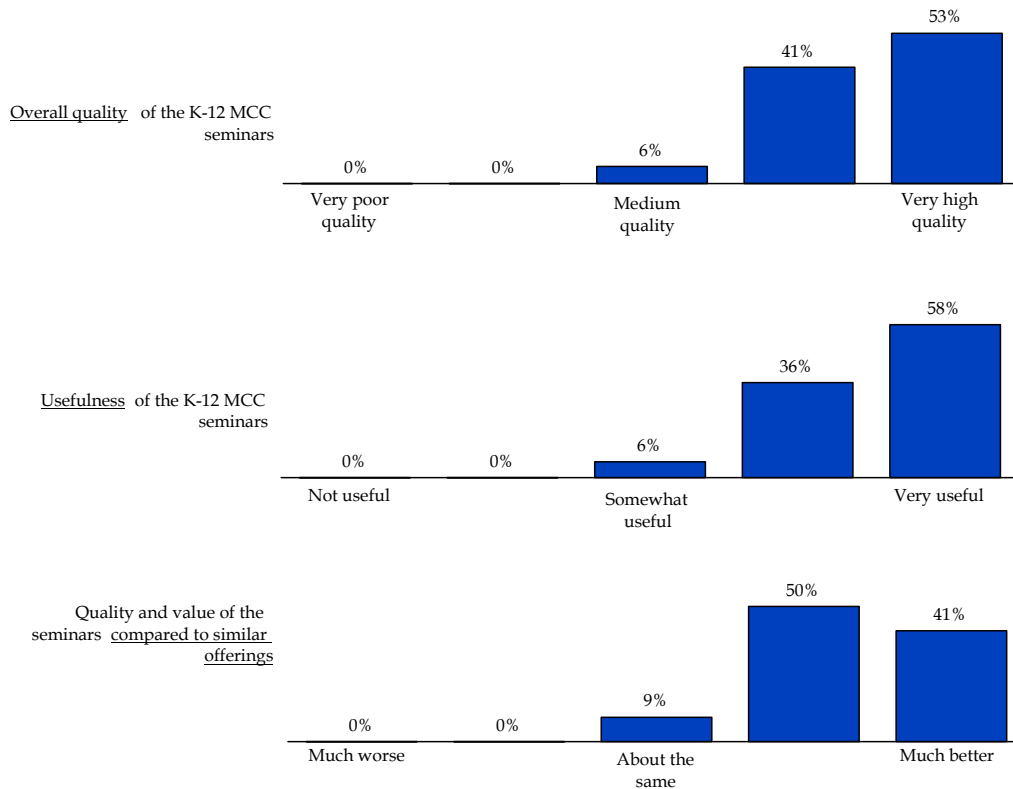
Even though a significant group recognized that they could potentially turn elsewhere for some similar services, an equally large portion of the client base has found few or no alternative sources of support for mathematics curriculum selection and implementation. Both of these groups, however, agree that what the K-12MCC has to offer is of very high quality.

<sup>5</sup> Note that only 72% of the survey respondents answered this question.

**CLAIM #4: The K-12MCC seminars are perceived as highly useful – not only meeting, but exceeding participant expectations.**

According to the survey and interview data, seminar participants offer almost exclusively positive reports when reflecting on their experiences. Among survey respondents, the great majority of seminar participants said that the seminars were of high or very high quality (94%) and were useful or very useful (94%). Moreover, 91% said that the seminars were of higher quality and more useful than similar offerings they had encountered in their professional work, with 41% saying that the seminars were “much better” than similar offerings.

**Figure 7. Quality, Usefulness and Comparative Value of the K-12MCC Seminar(s)**



One teacher leader we interviewed had this to say:

*In many ways [the seminar] exceeded my expectations. It's one of the best professional development things I've ever done. I guess to qualify that, I have a Master's plus 30 units. I'm also a presenter myself and tend to be critical of presentations.*

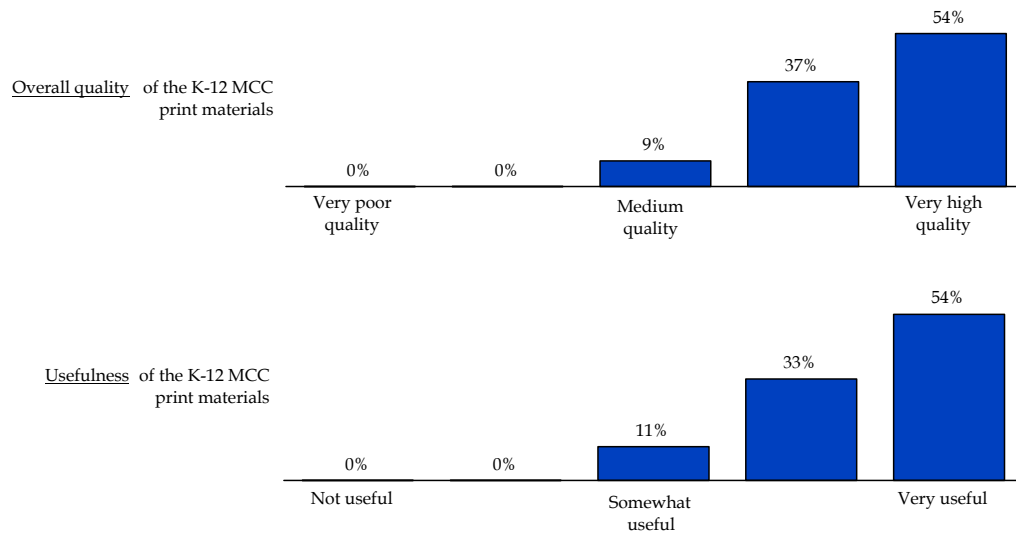
Similarly, a survey respondent provided the following written comment:

*I've been an educator for 27 years and have rarely experienced a set of seminars that has been so well thought out and has had such a significant impact on curriculum decisions. I can't say enough about the positive comments that I receive from each of the team members. I have recommended these workshops to everyone I've spoken with about selecting and implementing standards-based math curricula.*

Judging from survey and interviews responses, the K-12MCC received such positive ratings for usefulness because of the sessions' timeliness, overall quality, and the extent to which they provided opportunities to consider the specific circumstances of individual situations.

***CLAIM #5: The K-12MCC has created a rich collection of written materials that clients view as highly valuable resources.***

During our interviews, clients repeatedly told us how very helpful they found the K-12MCC's written materials, especially when it comes to selecting curriculum, developing an implementation strategy, and understanding the critical differences between using a "standards-based" program and a traditional textbook series. Similarly, the vast majority of survey respondents reported that print materials were of high or very high quality (91%) and useful or very useful (89%). Some clients indicate that they have returned to these materials again and again over time – a few even referred to certain documents, for example, *Choosing a Standards-Based Mathematics Curriculum*, as their "bibles."

**Figure 8. Quality and Usefulness of the K-12MCC Print Materials**

Interview data and survey comments confirm the survey ratings of the quality and usefulness of the K-12MCC print materials. The following quotes from our interviews with K-12MCC clients reflect sentiments that we heard quite frequently:

*The book and case studies are extremely useful. I have helped adopt and implement NSF programs in two different districts. I feel we would not have been successful without case studies!*

*The blue book on implementation was the most amazingly helpful. I have shared it with other curriculum directors.*

***CLAIM #6: The K-12MCC offers a range of additional support services that clients find very helpful in getting their individual needs met.***

Beyond the seminars and written materials, K-12MCC clients find the Center's additional services very useful. These services include technical assistance, consultations, referrals, and the K-12MCC website. They are also the elements of the K-12MCC's menu of offerings that enable clients to have such an individualized and seemingly tailor-made experience.

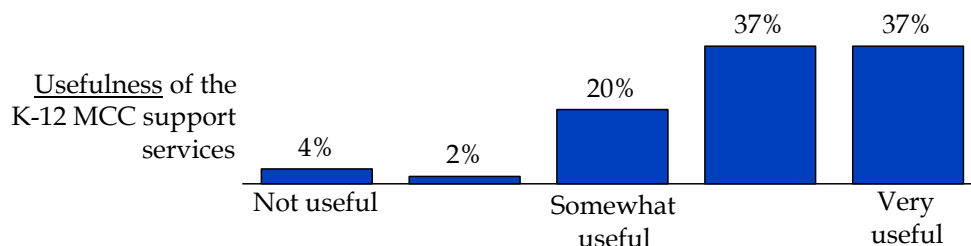
**Figure 9. Usefulness of K-12MCC Support Services**

Figure 9 indicates the degree of consensus among K-12MCC clients about the usefulness of these additional services. One K-12 math coordinator commented specifically on the extent to which she draws regularly on the information available on the K-12MCC website:

*It's the first place I go when I need information, to find a report, or to get to a link to some other place. They give me good information and expect that I can make a good decision for my context.*

During our interviews, a number of clients also mentioned calling the Center with follow-up questions or concerns that surfaced as they took the work of a seminar back to their local district or school. Those who mentioned such calls felt that they had been encouraged to do so by K-12MCC staff and found the experience uniformly helpful.

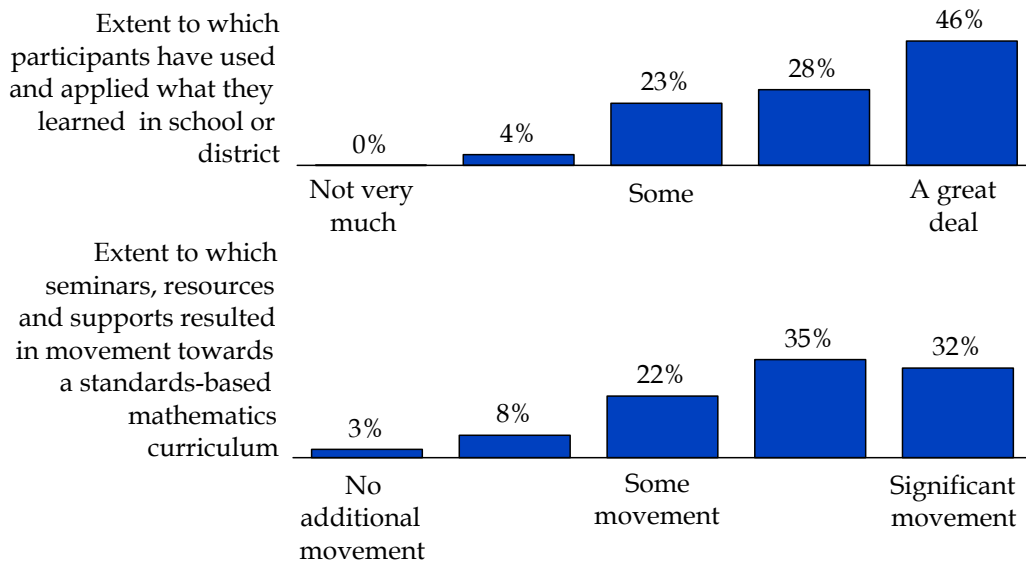
***CLAIM #7: The complete menu of seminars, resources, and supports offered by the K-12MCC contributes significantly to school and district efforts to improve their mathematics programs.***

Interview participants tell many stories of the impact that their experiences with the K-12MCC have had on their local efforts to improve mathematics programs. According to the survey data, almost three-quarters of the participants (71%) say that the K-12MCC has "contributed a lot to district efforts," and all of the rest say it has contributed somewhat – meaning that all respondents report that the experience has been beneficial in some way.

Nearly all survey respondents report that they have not only used and applied what they learned, but that their experience with the K-12MCC has also contributed to positive changes for their school or district. Three-quarters of the participants (74%) say that they have been able to use and apply what they learned about math curriculum selection and implementation in their school or district. Nearly as many (66%) report

that the seminars, resources, and supports offered by the K-12MCC resulted in the additional movement of their school/district toward a standards-based mathematics curriculum.

**Figure 10. Extent to Which Seminar Participants Used What They Learned and Resultant Movement Towards a Standards-based Mathematics Curriculum**



In addition, survey respondents indicated that their interactions with the K-12MCC had the following benefits:

- “Improved the sophistication and thoroughness of our curriculum selection process” (46%)
- “Helped my school/district make a connection to other schools/districts which were in the process of selecting or implementing standards-based math curricula” (42%)
- “Helped my school/district select one of the NSF-funded K-12 math curricula” (35%)
- “Helped my school/district implement one of the NSF-funded K-12 math curricula” (28%)

When survey respondents were given the opportunity to provide additional comments, K-12 MCC clients repeatedly noted the lasting impact of their interaction with the Center. Below are two representative examples of the responses we received.



*Before attending the first seminar "Choosing a New Curriculum" I didn't know what standards-based was and I didn't know anything about the NSF-funded curricula. That seminar really opened my eyes. Four years later, we are using Everyday Math in our elementary school with much success, and we are looking into implementing another standards-based program in our middle school.*

*We are in the middle of high school and middle school adoptions with the K-5 process starting this fall. Teachers that were with me at the workshop still use the information that we received those two days. All are working on current adoption committees and providing valuable insight, leadership, and direction as we attempt to move our district towards standards-based classrooms.*

***CLAIM #8: Interactions between the K-12MCC and their clients have lasting impact with participants returning for multiple experiences and often recommending the K-12MCC to others.***

Interview and survey participants indicate that they see the effects of their work with the Center long after the seminar or other interaction is past. According to all data sources, there is a tendency for clients to have multiple points of contact with the Center – for example written materials and seminar, or seminar and consultation, or multiple seminars. Participants find their initial experience of such value that they choose to come back for more. Among survey respondents, about three-fourths (76%) attended the *Creating New Curricula* seminar. About half as many (34%) attended *Implementing New Curriculum*, and about half that number (15%) attended *Building Curricular Support*. A handful have attended each of the other seminars.

During interviews, we asked clients if they plan to use the K-12MCC services in the future. Many schools and districts, especially those that had attended one or two seminars and are just beginning the implementation of a standards-based curriculum expressed an interest and need to continue making use of the Center's resources and support services.

All interviewees responded that they heartily would (and do) recommend the K-12MCC to others. One director of a state education organization said:

*I would recommend the implementation seminar to everyone. I've sent seven districts to MCC.*

A district Math Coordinator shared the following:

*Because I had attended a seminar a few years ago and knew the quality of them, I was comfortable sending middle school and high school teachers to one. As a result, our high school is now piloting a program I couldn't get them to look at 3 years ago.*

Many of the clients we surveyed and interviewed had multi-year histories with the Center and their work was ongoing. Both within and across districts, clients who have experienced the high quality of the K-12MCC seminars and implementation supports, consistently refer their colleagues, and arrange for others in their local area to participate in the work of the K-12MCC.

### **Future Considerations**

In thinking about the future, the K-12MCC clients that we interviewed and surveyed also offered many suggestions for options that the Center might bear in mind in proceeding with its work. While there were too many ideas to recount in this report, we highlight here three topics that surfaced regularly and that we believe warrant consideration.

- 1) *In this era of accountability and high stakes testing, there is an ongoing need for raising awareness about the range of alternatives to a curriculum consisting solely of traditional K-12 mathematics textbooks. There is also a desire to know what it takes to implement programs that attempt to go beyond or replace the textbook.*

Several clients pointed out that while they themselves might be well along in the implementation process, most schools and district around the country are not yet on the road to standards-based mathematics. Many do not know what the NSF mathematics materials are, let alone what might be contained therein. Therefore, there is great need for continuing to make educators aware of both the NCTM Standards and the mathematics materials that support them. Experienced clients wanted to ensure that the K-12MCC would continue to provide resources for those who might only be considering mathematics reform. They did not want MCC to lose that focus.

- 2) *Schools and districts need help making sense and productive use of the data they must collect.*

New federal mandates, such as "No Child Left Behind," require the generation of vast amounts of data on student achievement. Since they must collect the information in order to receive funding, K-12MCC clients wonder if the Center might be able to help

them make better use of the data. They would like to better understand the data they have and know how to use it wisely. Clients are also interested in having the K-12MCC suggest additional information that they might collect to provide evidence for and further bolster their reform efforts.

- 3) *Providing support during implementation, particularly as enthusiasm wanes and personnel changes, is an ongoing and critical need as schools and districts put innovative programs in place.*

Anyone who has tried quickly learns that mathematics reform does not happen overnight. It is long-term work. One of the greatest challenges is simply staying the course: not getting discouraged when the test scores flatten after the initial gains, fine tuning the effort, finding ways to keep it fresh. The consistency of staff and offerings at the K-12MCC has enabled clients to rely on the Center for long-term support – sending back teams to strengthen their skills or participating in a telephone consultation. Some clients would like to see more support for those who are well beyond the early implementation stages. Some of the challenges they see in the later years include handling a new wave of parent critics, bringing along the most reluctant teachers, and maintaining a coherent vision that gets them beyond simply have a quality program in place.

## **Summary**

Through this report, we have articulated and substantiated the cornerstone claims that the K-12MCC can make about its work. Taken together, the set of claims accompanied by the evidence that supports each claim, make a strong overall case that the K-12MCC plays an important national role in the improvement of K-12 mathematics education. It is also clear to us, from our interviews and survey data, that the Center is more than an “implementation” center. Rather we see it now as a curricular support center that can help districts and schools with all aspects of improvement that involve curriculum and materials – from self studies, to pilots, to adoption, and to implementation, and overall program design and development. Schools and districts both want and need help as they seek to enrich practice and build mathematics programs that go beyond the traditional textbook. The K-12MCC is well equipped to offer that kind of customized support.

Finally, let us also say that this Center is also well positioned to add to the developing research agenda surrounding the selection and use of innovative mathematics curricula. Few studies exist that tell us about curricular decision-making, curriculum implementation, and the overall role of curriculum in shaping student learning experiences. The K-12 Mathematics Curriculum Center is in a strong position to contribute to this knowledge base. Over the past five years, staff from the K-12MCC

have collected considerable data in going about their work. They have also collaborated with their colleagues to successfully publish articles in prominent educational journals, such *Phi Delta Kappan* and *Educational Leadership*. We are quite confident that this Center has the capacity to carry out a program of applied research, making important contributions the field while simultaneously serving clients across the country.