



Classroom Climate, Instructional Practice and Mentorship Experience in the eMINTS Expansion Classrooms: A Two-Year Study



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This report presents data from observations of classroom climate, instructional practice and mentorship experience in the eMINTS Expansion program classrooms. Data from the entire two-year program is analyzed. The analysis describes clear relationships between a positive classroom climate and the use of effective behavior management strategies. The analysis indicates that these classroom characteristics are also related to the observed instructional practices of teachers. Differences between the classrooms of mentor teachers and those of mentored teachers over the two years of the expansion program are considered. The two-year data suggests an overall improvement in the observed classroom climate of eMINTS classrooms.

Introduction

The eMINTS Expansion project, conducted in the 2000-2001 and 2001-2002 school years in 27 eMINTS schools, focused in part on understanding the relationship between classroom climate, instructional practices and strategies for classroom behavior management. A report completed after the first year of the project showed a relationship between a positive classroom climate, constructivist instructional practices and effective behavioral management. The current report revisits this relationship from the vantage point of two years of observational data from the eMINTS Expansion classrooms.

The eMINTS Expansion project explored strategies for expanding the impact of the eMINTS program throughout participating schools. At the beginning of the expansion project, eMINTS schools typically were equipped with two classrooms, one in third grade and one in fourth grade. The expansion project provided two additional eMINTS classrooms in each participating school. In the expansion schools, the existing eMINTS teachers acted as mentors for the new teachers with the intent that the existing eMINTS teachers would provide the additional in-classroom support to the new eMINTS teachers that is normally provided by eMINTS Cluster Instructional Specialists during classroom visits. The existing eMINTS teachers were provided with professional development by eMINTS staff and others to assist them in their role as mentors. The professional development included two face-to-face sessions and a year long online course in mentoring. Another intended outcome of the expansion project was that the development of mentor teachers would increase the likelihood that the eMINTS instructional practices

This report is one product of the eMINTS Evaluation project. See the following website for other reports and the overall evaluation plan: <http://www.emints.org/evaluation>.

The eMINTS Evaluation project focuses on student impacts, teacher impacts, changes in learning environments and the outcomes of project services.

would be expanded beyond the eMINTS classrooms (both existing and those added by the expansion project) resulting in a more comprehensive school adoption.

In their investigation of this program, the eMINTS evaluation team observed a set of 99 classrooms in 27 eMINTS Expansion schools in the winter of 2002 using a variety of scales. The evaluation team revisited 82 classrooms in 26 eMINTS Expansion schools in the winter of 2003.

Background

A well-ordered and effective learning environment is one in which student needs are being met. Some researchers hold the view that misbehavior is a response to unmet student needs.¹ Effective behavior management is one of the most challenging aspects of teaching in an elementary classroom.² Without classroom order, teachers struggle to teach and students struggle to learn.

In a traditional classroom, teachers maintain order by limiting student activity. The school day is divided into discrete periods. Teachers instruct students to sit in desks, to complete specific tasks in a predetermined sequence, to remain quiet and so forth. The entire environment is structured to maximize student compliance and operational efficiency. Educators have traditionally assumed that this efficiency will produce the most effective environment for student learning while minimizing the number of disciplinary referrals.

The eMINTS classroom is not a traditional classroom. In contrast to the traditional model, the eMINTS model sees students as part of a community of learners. In an eMINTS setting, students play an active role in acquiring knowledge through shared experiences, hands-on activities and cooperative learning. Teachers organize units of study around broad themes integrating multiple academic subjects. Successful behavior management translates into a positive classroom environment where students are on task, working in collaboration with the teacher and one another, engaging in authentic lessons and finding solutions to problems. An excerpt from a field note exemplifies this model, “The room has a low hum of kid activity. Kids are talking and writing and moving around when needed but there is no roaming. Kids freely and easily help each other when needed. Everyone is on task.” Nonetheless, teachers and principals report fewer discipline problems and higher rates of work completion among eMINTS students than non-eMINTS students.

The attempt to understand this apparent contradiction, the existence of a relatively unstructured yet effective classroom environment, has directed some attention to the ways classrooms are structured as learning environments. Two factors are central to the creation of a learning environment where supportive and collaborative work is possible:

¹ Glasser, W. (1990). *The Quality School: Managing Students Without Coercion* (p. 225). New York: Harper and Row.

² Whiteman, C. and Coleman, M. (2000). *Early Childhood Education* (p. 331). New Jersey: Prentice Hall.

the instructional practices of the teacher and the physical attributes of the classroom. The eMINTS evaluation project measures instructional practices by applying the eMINTS Lesson Typology³ to observed lessons. The characterization of the physical attributes of the classroom is accomplished through the use of the eMINTS Classroom Climate Scale.

The classroom climate scale provides a framework for the systematic observation of the physical characteristics of each eMINTS classroom. The existing research enabled the evaluators to identify 13 dimensions hypothesized to characterize a high-quality classroom climate. The 13 dimensions range from the arrangement of student tables or desks to the teacher's approach to student discipline. Each dimension is measured using a four-point ordinal scale. The measurements on each of these dimensions were correlated to one another. Key relationships between the observable features of the classroom setting and effective behavior management were identified.

Description of the Classroom Climate Scale

The classroom climate scale was designed to measure the extent to which the classroom environment supports the type of instruction encouraged by the eMINTS program. The term *classroom climate* refers to the immediate educational environment in the classroom. Classroom climate includes the classroom setting, as well as the physical and emotional components of the learning environment. To identify conditions conducive to a positive classroom climate, evaluators prepared the classroom climate scale to measure 13 observable dimensions. Possible scores range from a low of 0 to a high of 3 on each dimension.⁴ The scale categorizes the physical features of a classroom, the interactions between teachers and students and the materials and objects in a classroom. Research addressing the environmental climate needs of school-age children and the unique properties of a technology-rich learning environment were used in preparing the scale.⁵

This report describes the classroom climate scale and uses its dimensions to understand how teaching activities and the physical environment support effective classroom management practices in an eMINTS classroom.

Methods

The principal data collection method for this report was direct classroom observation. All the participating classrooms were observed for at least two lessons. During these lessons, teacher and student work was observed and coded according to two rubrics developed for the eMINTS program, the eMINTS Lesson Typology and the eMINTS Classroom

³ See *A General Typology of eMINTS Lessons* at <http://emints.org/evaluation>.

⁴ See *Classroom Climate, Instructional Practices and Effective Behavior Management in eMINTS Expansion Classrooms* for a more detailed description of the classroom climate scale on the eMINTS website: <http://www.emints.org/evaluation>.

⁵ The scale was drawn from *School Age Care Environmental Rating Scale*, North Carolina State University Cooperative Extension; *Project Better: Building Effective Teaching Through Educational Research*, Maryland State Department of Education; *Early Childhood Education*, Prentice Hall and *Developmentally appropriate practice in early childhood programs*, National Association for the Education of Young Children.

Climate Scale. Information from these rubrics was supplemented with descriptions of classroom activities and teacher interviews.

Key Measures: Relating the eMINTS Classroom Environment to Effective Behavior

Management Strategies

eMINTS classrooms blend technology-rich resources with inquiry-based teaching strategies. Particular requirements accompany technology-rich classrooms. Multiple student computers, special desks, electrical and Internet wiring and media equipment must be accommodated within the space of a traditional classroom. These resources supply the tools for teachers to lead lessons that incorporate student collaboration, investigation and discovery. eMINTS teachers maintain effective learning environments using technology as a tool for inquiry-based teaching.

Using the measures from the classroom climate scale, this analysis shows four dimensions were positively related to effective behavior management practices in eMINTS classrooms. Effective and less effective behavior management strategies could be distinguished from one another on the basis of teacher sensitivity to these four areas in creating their classroom environments: exhibiting student-produced work; arranging space for flexible use; providing soft materials and work areas for students; and interacting with students in a respectful and encouraging manner.⁶

Consistent with the previous analysis, teachers observed conducting student-centered facilitated lessons were more likely to have classrooms with these positive aspects. The combination of a positive classroom environment and the use of student-centered, facilitated, inquiry-based instructional practices helped to construct a well-ordered and effective learning environment.

The following discussion presents the distribution of four key measures drawn from the classroom climate scale that were related to the presence of effective behavior management strategies in eMINTS classrooms for two years in a row. Three of these measures address aspects of the physical space, while the fourth concerns the interactions between students and teachers. The first measure discussed is the main dependent variable, the application of effective behavior management strategies.

Effective Behavior Management Strategies

Disruptive behavior limits student learning time. eMINTS teachers do not expect their students to sit quietly in their seats; they expect their students to be productively engaged in the lessons. The *behavior management* variable focused on teaching strategies that

⁶ The earlier study indicated that student physical comfort in the classroom was significant. This component did not prove significant the subsequent year and was dropped from the analysis. Evaluators posit that in the first year not all classrooms had air-conditioning installed as a condition of the eMINTS program. Those rooms without air-conditioning were stiflingly hot when the computers were in operation. At the time of the second-year visit, all air-conditioners were in place.

helped students develop the intrinsic skills necessary to behave in socially acceptable ways.

Effective teachers had classrooms that ran smoothly. Their behavior management strategies influenced student self-discipline by providing learning environments sensitive to their needs. In these classrooms, students clearly understood the behavioral standards and expectations; teachers supported them with on-the-spot coaching when needed and rewarded them for displaying the desired behaviors.⁷

Teachers Established High Standards and Clear Expectations

Teachers employing effective behavior management strategies were instrumental in helping students institute policies for governing classroom behavior. These teachers recognized that student choice in class policies instilled ownership in the policies and made them more meaningful. Formal *classroom contracts*, *classroom bylaws* or *classroom constitutions* established high standards and clear expectations. Often, the entire class signed the resultant class document. The word evaluators saw most often in the class rules was *respect*. Winter 2003 observations were consistent with winter 2002 observations. Written agreements that committed the class to appropriate behavior and encouraged student self-discipline were again seen, as illustrated by these descriptions from two different classrooms:

The same three rules are posted as last year: Respect People, Respect Property and Do Your Best. At the beginning of the year, the teacher engages the students in dialogue about what kind of a classroom the students would like to help establish.

There are five rules for being a responsible third-grade citizen posted in the room: listening actively, completing assignments, treating others the way we would like to be treated, doing our best work and respecting classroom equipment. The teacher said the class brainstormed the rules.

Many times, the teachers monitored the respect in the classroom and helped students practice being respectful using on-the-spot coaching.

Teachers Provided On-the-Spot Coaching

Teachers monitored classroom activities to anticipate problems and proactively intervened when appropriate in both 2002 and 2003. When one student was making fun of another student, the teacher asked, “Are you respecting [student]?” The teacher directed the student to reflect on the behavior, reinforcing the expected classroom norms. In a different class, when one student interrupted another student, the teacher said, “I’m sorry [student], [another student] wasn’t finished speaking.”

⁷ Kostelnic, M., Soderman, A., & Whiren A. (1999). *Developmentally Appropriate Curriculum: Best Practices in Early Childhood Education* (p. 213). New Jersey: Prentice Hall.

The following examples typify teachers' coaching activities in two different classrooms:

A pair of students was having a disagreement. When it became apparent that they were not going to find a solution without intervention, the teacher entered the picture. She said, "Are you using language that is appropriate in our room?" When suitable language was used, she went on to ask them, "What do we have to do to settle this?" When the pair gave their solutions, she asked, "Do you think that is an acceptable alternative?" The pair did find a solution and went to work on their project (2002).

A group of students needed to come to a consensus on a decision. They had come to a stalemate and the disagreement was becoming increasingly loud. The teacher approached the group and asked, "[Student], why do you think buying 300 yards of fabric is a good choice?" Then to the other students she asked, "Is that a sound argument? Do you want to talk about it?" The teacher guided the students toward a peaceful settlement (2003).

Evaluators often saw the teacher's influence in crafting a positive learning community in on-the-spot coaching. Often, teachers used rewards to further cultivate a desired behavior.

Teachers Identified and Rewarded Desirable Behavior

Teachers identified and rewarded appropriate student behavior. In general, much more positive than negative interaction took place in the classrooms. A statement such as "I'm glad to see [Student] with their materials out and ready to go" rewarded that student with attention and reminded the student who was dawdling of the expected behavior.

Rewards can be important motivators.⁸ Teachers used incentives to emphasize the positive outcomes of desired behaviors. The majority of teachers used incentives in both observation years. Teachers gave praise, attention and rewards more often than they presented students with the negative outcomes of misbehavior. Students were offered activities, privileges and special attention. Some classrooms recognized the "good worker" of the month. Many classes used happy grams and candy as rewards.

In both years, to boost student interest in appropriate behavior, teachers used the following: wearing a favorite team's sports jersey for completed homework; participating in an ice cream sundae party for acquiring math facts, sending notes to parents when students exhibited kind behavior; having their stories read over the intercom by the principal for completed work; bidding at a class auction with play money earned for class jobs; and eating lunch with the teacher for setting and reaching a goal. These teachers consistently enforced behavioral expectations and used creative methods as part of their strategies. The effective teachers were attuned to the capabilities of all of their students and worked to include everyone with the incentives. For example, to participate in the ice

⁸ Henson, K.(2004). *Constructivist Teaching Strategies for Diverse Middle-Level Classrooms* (p. 343). Boston: Person Education, Inc.

cream sundae party, students had to get passing grades on their multiplication tables. Even the students who passed *zero times* earned spots at the party. Those students who passed zero times were given the plates; those who passed ones were given the spoons; those who passed threes were given the bananas and so on. To enjoy the final product of the ice cream sundae, each group of students shared with each other what they earned, because eating ice cream sundaes required the plates, spoons and fixings earned by others in the class. All students enjoyed themselves as a class community as they had to share to participate.

Tables 1a and 1b list the criteria established for behavior management in the classrooms.

Table 1a
Percentage of Behavior Management Strategies Used in Year 1 and Year 2

| Value | Criteria | Year 1 | Year 2 |
|-------|---|--------|--------|
| 0 | Physical punishment, belittlement apparent | 0.0 | 0.0 |
| 1 | Teacher-enforced compliance <i>or</i> little control evident | 24.2 | 23.2 |
| 2 | Praise, attention and rewards given for good behavior | 40.4 | 35.4 |
| 3 | Students help develop class rules and procedures. Students helped to find solutions to problems through discussion. Good behavior rewarded. Teacher thinks ahead to avoid problems. | 35.4 | 41.5 |
| | Total | 100.0 | 100.0 |
| | Total Number of Teachers | 99 | 82 |
| | P-Value | | 0.6840 |

Table 1b
Changes in Frequency Between Year 1 and Year 2
Regarding Behavior Management Strategies

| Criteria | Frequency | Percent |
|---|-----------|---------|
| No change in behavior management strategies | 50 | 61.0 |
| Positive change in behavior management strategies | 19 | 23.2 |
| Negative change in behavior management strategies | 13 | 15.9 |
| Total Number of Teachers | 82 | 100.0 |

Table 1a shows the results of the behavior management observations in eMINTS Expansion classrooms during the first observation in winter 2002 and the second observation in winter 2003. There was no significant difference between Years One and Two in the behavior management strategies used. In the expansion classrooms, evaluators did not observe physical punishment or belittlement. Observed the least amount of times in both years were classes controlled by enforced compliance or classrooms with minimal control. In about 24% of the 2002 classrooms and about 23% of the 2003 classrooms, teachers took the major responsibility for the class conduct using primarily threats of punitive consequences for enforcement or had minimal conduct expectations and students who were noisily talking about other things besides their schoolwork. In 2002, evaluators most often observed teachers who used praise, attention and rewards as a strategy, with about 40% of the classrooms falling into this category. In 2003, the most common classroom situation had a teacher who thought ahead to avoid problems and who, when a problem did arise, handled the problem before it escalated. The children in these classrooms helped develop and felt ownership of the classroom procedures and rules. When warranted, the teachers in these classrooms helped students find solutions to problems through discussion and coaching.

Table 1b presents the changes in frequency between the first and second observation years. About 24% of the cases showed a positive change in the behavior management strategies employed; about 60% of the cases showed no change; and in 16% of the cases a negative change in behavior management strategies was evident. In the 24% of the cases

that revealed a positive change, teachers changed their interactions with students. Some of these teachers indicated that they were able to be more proactive and prevent problems from occurring. A teacher demonstrated a positive change in behavior management by making the effort to redirect a student. When a student was disengaged from the lesson, the teacher said, “It’s probably hard to see the supply list from way over there,” and invited the student to a better vantage point. Additionally, many teachers credited being better prepared with interesting lessons as a positive change. Some teachers said that the lessons more effectively held the students’ attention, even the students who had previously been behavioral challenges.

In 60% of the cases, no change was apparent. Many of the teachers with unchanged ratings were doing an effective job of managing student behavior in Year One. One of those teachers features a student a week in the class, displaying photos of that child. At the end of the week, classmates write, “I will remember (student) because . . .” and the papers are assembled and gifted to the child. Some of the teachers’ who were unchanged, were still using predominately punitive methods for managing student behavior in Year Two. For example, one unchanged teacher told a student, “You’ll get a bad grade for participation if you don’t listen.”

In 16% of the cases, negative change was apparent. Some teachers who fell into this category were inconsistent in their treatment of children. The same offense could result in the teacher laughing at one child and punishing another child. One teacher who moved in a negative direction was candid in the interview:

I found myself cranky; I’ve found myself darn hateful at times. And, I’m at the point where at least I realize that I need a change because I’m not doing what I need to do for my kids. My kids, I’ve been cranky with them this year time and time again . . . I’m real tired of the same classroom problems and right now, it’s almost to the point where it’s not worth the effort. I’m emotionally and physically drained by the end of the day and it’s just not worth the effort right now to me.

Exhibiting Student-Produced Work

Classrooms that connected students with their learning environments featured walls covered with individual and collaborative student projects, signs and exhibits.⁹ An environmentally rewarding classroom is one in which children have opportunities to display their work.¹⁰ White and Coleman have asserted, “The amount and type of children’s work displayed in a classroom is a good indicator of a developmentally appropriate classroom.”¹¹ The *student-produced work* variable focused on observing displayed work on a current topic from every student in the class.

⁹ Kohn, A. (1999). *The Schools Our Children Deserve* (p. 235). Boston: Houghton Mifflin.

¹⁰ Morrison, G. (2001). *Early Childhood Education Today* (p. 364). New Jersey: Prentice Hall.

¹¹ White, C. & Coleman M. (2000). *Early Childhood Education* (p.306). New Jersey: Prentice Hall.

During the 2003 observations, evaluators witnessed many examples of teachers valuing and generating opportunities for students to showcase their work. One classroom focused on writing. The teacher spoke to the students as if it were a privilege to be able to write well. One young man sitting next to an evaluator said, “When we get better at writing, we’ll write more.” The student voiced true excitement at being able to write well and was excited to have his work on display. Many schools had large bulletin boards outside each classroom for the ready display of student work. One teacher in particular was so adamant about having the students see their work displayed that even though the part of the building that housed her classroom was set for demolition, the library served as a display area for her students.

Tables 2a and 2b list the criteria established for student-produced work exhibited in the classroom.

Table 2a
Percentage of Student-Produced Work Exhibited in the Classroom in
Year 1 and Year 2

| Value | Criteria | Year 1 | Year 2 |
|----------------------------|-------------------------------------|--------|--------|
| 0 | No schoolwork or artwork displayed | 41.4 | 13.4 |
| 1 | Adult-produced work displayed | 18.2 | 26.8 |
| 2 | Some child-produced items displayed | 23.2 | 28.0 |
| 3 | One item per child displayed | 17.2 | 31.7 |
| Total | | 100.0 | 100.0 |
| Total Number of Classrooms | | 99 | 82 |
| P-Value | | | 0.0004 |

Table 2b
Changes in Frequency Between Year 1 and Year 2
Regarding the Exhibition of Student Work

| Criteria | Frequency | Percent |
|---|-----------|---------|
| No change in student work exhibited | 24 | 29.6 |
| Positive change in student work exhibited | 41 | 50.6 |
| Negative change in student work exhibited | 16 | 19.8 |
| Total Number of Classrooms | 81 | 100.0 |

Frequency missing = 1

Table 2a presents the percentage of student-produced work exhibited in the classroom during the first visit to the expansion classrooms in winter 2002 and during the second observation in winter 2003. Unlike the results for the behavior management strategies, there were statistically significant differences in the student-produced work exhibited in the classrooms between Years One and Two. About 41% of the 99 classrooms observed in 2002 displayed no schoolwork or artwork. On the return visit in 2003, only about 13% of the 82 classrooms lacked student displays. In 2002, about 40% of the classrooms had some student-produced items on display, compared to nearly 60% in 2003. In the 40% of the 2002 classrooms with some student-produced work, 17% had an item displayed from each student. Of the nearly 60% of the 2003 classrooms with some student-produced work, over 30% had an item displayed from each student.

Table 2b presents the changes in frequency between the first and second observation years. In 50% of the cases, there was positive movement in the area of student displays; about 30% of the cases remained unchanged; and about 20% of the cases revealed a decrease in student work displayed. In 50% of the cases that revealed a positive change, teachers made the critical choice to share ownership of the wall displays with students. On the return visit, rooms that had previously featured no student work or commercial work featured student-made posters on decision making; student-made digital photos of types of matter, partner-made mobiles on government and group science projects on insects.

Arranging Space for Flexible Use

Space either supports or hinders teachers' instructional efforts.¹² "The organization of physical space is an effective predictor of program quality as it affects what children do, determines the ease with which they are able to carry out their plans and affects the ways in which they use materials."¹³ The *flexible space* variable focused on flexible and accessible classroom space arrangements that allowed students to gather in small groups and create the spaces needed to complete their work.

Some classrooms had the luxury of plenty of space, including enough space in front of the SMART Board for student chairs. Some classrooms had an area large enough for separate computer tables in addition to student desks. Teachers said the extra area made it easier to do messy activities.

Some teachers endured unnecessary problems because they overlooked the effect the physical environment had on behavior. Where they found space problems, evaluators often found problems with behavior. In a particularly cramped room, students were playing under the desks. The teacher had to stop the lesson several times to corral the students. Teachers felt that classroom arrangements could have both positive and negative effects on their ability to support student learning.

A chief consideration for teachers was providing space for the eMINTS equipment while providing space for individual, group and experiential learning

Places for Individual, Group and Experiential Learning

Examples of having room for independent work by using the available space flexibly were evident in both 2002 and 2003. Teachers made efforts to designate areas, niches, crannies, lofts and corners in their classrooms for the support of privacy and individual work.

eMINTS students need space for collaborative work. In a sampling of 2003 eMINTS classrooms, the following projects took place: students wrote books as part of a unit on the Civil War, designed an environmentally friendly community, constructed simple machines using levers, created a zoo for their community, composed newsletters to communicate with parents and published a brochure promoting a tropical country. Each of these activities required space for pairs or groups of students to work comfortably.

Effective teachers took control over the learning environment to provide space for experiential learning. The National Association for the Education of Young Children

¹² Nicolson, S. & Shipstead, S. (1998). *Through the Looking Glass: Observations in the Early Childhood Classroom*. (p. 298). New Jersey: Prentice Hall.

¹³ Kostelnik, M, Soderman, A, & Whiren A. (1999). *Developmentally Appropriate Curriculum: Best Practices in Early Childhood Education*. (p. 151). New Jersey: Prentice Hall.

advocates experiential learning in the primary grades.¹⁴ One challenge in eMINTS classrooms is having the space for hands-on activities. Evaluators observed many eMINTS teachers meeting the challenge. For example, in one class, students were holding a *Science Court*. They were helping each other, making predictions and doing experiments on steam, condensation and evaporation to answer the question “Is there water in the air?” Another teacher was enthused about using experiential learning: “You can do so many hands-on things. That whole cabinet back there on the right is full of science activities. I wrote a \$5000 grant and received it; so I have all this wonderful stuff. You can get them going with hands-on projects.”

Another teacher who made space for experiential learning gave her reason:

It’s changed the way I think about things. To me, this lesson was really good as compared to reading something out of the book. It makes you doublethink everything that you do. And now I think that some things I take out of textbooks may not too good if they haven’t done some hands-on thing with it.

Tables 3a and 3b list the criteria established for flexible space arrangement in the classrooms.

¹⁴ Bredekamp S., & Copple, C. eds. (1997). *Developmentally Appropriate Practice in Early Childhood Programs* (p. 141). Washington D.C.: National Association for the Education of Young Children

Table 3a
Percentage of Classrooms with Space Arranged for Flexible Use in
Year 1 and Year 2

| Value | Criteria | Year 1 | Year 2 |
|----------------------------|---|--------|--------|
| 0 | Space prevents teacher's access to all students. Fixed, unchangeable arrangement. | 2.0 | 0.0 |
| 1 | Space affords low mobility. Teacher and students have to squeeze by to get to some parts of classroom. | 16.2 | 23.2 |
| 2 | Space does not interfere with activities. Space can be restructured for more than one activity at a time. | 52.5 | 37.8 |
| 3 | Space promotes independent use, small group work and whole group work. New spaces can be created. | 29.3 | 39.0 |
| Total | | 100.0 | 100.0 |
| Total Number of Classrooms | | 99 | 82 |
| P-Value | | 0.1034 | |

Table 3b
Changes in Frequency Between Year 1 and Year 2
Regarding Flexible Use of Space

| Criteria | Frequency | Percent |
|---------------------------------|-----------|---------|
| No change in use of space | 38 | 46.9 |
| Positive change in use of space | 21 | 25.9 |
| Negative change in use of space | 22 | 27.2 |
| Total Number of Classrooms | 81 | 100.0 |

Frequency missing =1

Table 3a shows how space was arranged in classrooms during the first visit to the expansion classrooms in winter 2002 and during the second observation in winter 2003. No significant difference existed in use of space between Years One and Two. Although not statistically significant, many classrooms had improvements. In 2% of the 2002 classrooms, the space was arranged in such a manner that the teacher could not physically get to all students and the students were essentially immobile while in the classroom. These two cases were rectified on the return visit in 2003. Low mobility was also problematic for about 16% of the 2002 classrooms and about 23% of the 2003 classrooms. There was about a 10% gain achieved in classrooms where the space could be rearranged to accommodate different activities. These classrooms had flexibility not only for individual work, but also for small group and whole-class work. The classes had the space, or made the space, for children to rearrange furniture and to create new spaces. Some of these classrooms had the square footage to make it easy to have space for

activities; other classrooms had to carefully plan to accommodate the space needs for a variety of activities and curricular goals.

Table 3b shows the changes in frequency between the first and second observation years. About 26% of the cases demonstrated a positive change in the use of space; about 47% of the cases had no change; and about 27% of the cases showed a negative change in use of space. Over half of the teachers rearranged their physical space between the first- and second-year visits. Teachers accomplished these rearrangements in a variety of ways. A couple of teachers moved to larger classrooms; a few teachers requested and received rewiring for their classrooms to accommodate the room arrangements they wanted. In some classrooms, the addition of wiring poles allowed a large aisle. Many times, even a slight adjustment made a positive difference. Teachers said they “played around with different arrangements.” Field notes document these arrangements in a variety of eMINTS classrooms:

Space was freed for students to gather when the teacher’s desk was moved to a different angle, allowing students more space in the front of the room.

Teacher said she rearranged her room differently than last year. The unusual arrangement, best described as random student desk placement, works. Students can see the SMART Board. The arrangement is effective in opening space in the middle of the room.

The addition of a small table in this large classroom allows a student to work individually or conference with his/her partner. The teacher says sometimes a student just needs a break and of the student’s “own free will” seeks out the opportunity to use the extra table.

The room is set up only slightly different than last year. This year the student desks are clustered in groups of six instead of groups of three. The space that had low mobility now has clear pathways.

The space arrangement has been changed to open up space for students to gather in a group. The tables are butted against the outside walls, which frees the space in the center of the room.

In 27% of the cases, the space arrangement in the second year was not as desirable as it was in the first year. These teachers continued their struggle with space issues. These teachers referred to space as a “drawback,” a “hardship,” a “handicap” and an “obstacle for me to overcome.” One of these teachers said she knew her space was problematic, but she “can’t figure out how to fix it.” Another teacher had her room rewired to accommodate what she called a center aisle, but the aisle was actually a sliver of space through which the teacher could barely squeeze. Some teachers said they felt there was no room for their desks or for students to form groups. Poor space arrangement was not limited to small classrooms. In a large classroom, an evaluator observed students tripping over wires on the floor, holding their chairs above their heads to move from their desks to their computer stations and bumping into desks. In a few instances, the room setup

remained the same, but the addition of more students and more computers to the room cramped the available space.

Providing Soft, Sensory, Tactile Elements

Students were able to explore with their senses in the majority of eMINTS classrooms. Early childhood professionals support the provision of sensory experiences and the use of “soft spots.”¹⁵ Including soft spots in the learning environment appeals to children, provides comfort and aids in focusing student attention. Soft surroundings also help absorb noise.¹⁶ The *soft, sensory, tactile elements* variable focused on the availability for student use of soft, malleable, stuffed and textured components.

Observations from both years show the different ways that eMINTS teachers provided soft areas for student work:

In the back of the room is a reading loft with two soft chairs. Additional soft seating is under the loft. There are a string of lights and vines strung on the loft.

Last year there were no soft things in the room; this year teacher has a soft small animal for each student at their computer. The animals go along with the jungle theme this year. The alphabet, student nameplates, curtains and other things are jungle related. The animals are used as a quick way to divide students into groups.

There are beanbags, mats, pillows, large stuffed animals and a child-sized sofa. The students can bring soft stuff from home to lie on. The students earn the privilege of using these softer items in the room.

Tactile materials helped create a welcoming environment. In both observation years, pillows in the reading area enticed students to get comfortable with a book; a carpeted area or carpet squares invited students to sit on the floor; manipulatives in easy reach attracted students to touch. Observable features in classrooms included furniture especially sized for children, live classroom pets, stuffed animals, tactile tables and materials for sorting.

Tables 4a and 4b list the criteria established for soft, sensory, tactile elements in the classrooms.

¹⁵ Bredekamp S., & Copple, C. eds. (1997). *Developmentally Appropriate Practice in Early Childhood Programs* (p141). Washington D.C.: National Association for the Education of Young Children.

¹⁶White C.DS. & Coleman, M. (2000). *Early Childhood Education* (p. 303). New Jersey: Prentice Hall.

Table 4a
Percentage of Soft, Sensory, Tactile Elements Provided in the Classroom in Year 1 and Year 2

| Value | Criteria | Year 1 | Year 2 |
|----------------------------|---|--------|--------|
| 0 | No soft, sensory, or tactile elements available for student use | 33.0 | 29.3 |
| 1 | One soft, sensory or tactile element available for student use | 47.4 | 35.4 |
| 2 | Two or more soft, sensory or tactile elements available for student use | 10.3 | 26.8 |
| 3 | Two or more soft, sensory or tactile elements especially sized for children | 9.3 | 8.5 |
| Total | | 100.0 | 100.0 |
| Total Number of Classrooms | | 97 | 82 |
| P-Value | | | 0.0366 |

Table 4b
Changes in Frequency Between Year 1 and Year 2 Regarding Soft, Sensory, Tactile Elements

| Criteria | Frequency | Percent |
|---|-----------|---------|
| No change in availability of sensory elements | 44 | 54.3 |
| Positive change in availability of sensory elements | 25 | 30.9 |
| Negative change in availability of sensory elements | 12 | 14.8 |
| Total Number of Classrooms | 81 | 100 |

Frequency missing = 1

Table 4a establishes the availability for student use of soft, sensory or tactile elements during the first visit to the expansion classrooms in winter 2002 and during the second observation in winter 2003. A significant difference in the availability of soft, sensory, tactile elements provided in the classrooms between Years One and Two were apparent. The majority of classrooms in both years had only one sensory element available for student use. Most often this one element was a rug. Nearly one-third of the classrooms afforded no tactile elements for the student use in the first year; this percentage decreased in the second year. The biggest difference between the two years was the availability of two or more soft, sensory or tactile elements, changing from about 10% in Year One to about 27% in Year Two.

Table 4b establishes the changes in frequency between the first and second observation years. Over 30% of the cases showed a positive change in soft elements available for student use; over 54% of the cases had no change; and over 14% of the cases revealed a negative change in the soft elements in the classroom. A few of the teachers who had class pets that roamed free (rabbits, for instance) the first year of the expansion grant, removed them from their classrooms the second year. The teachers attributed the

presence of wiring in the room as a reason for doing away with classroom pets. One teacher said she was ordered by the health department to ban her small dog from the class.

Interacting in a Respectful and Encouraging Manner

A significant body of research findings points out that the quality of the teacher-student relationship influences student behavior.¹⁷ The present study found such a relationship. For both years, the strongest correlation with effective behavior management was a respectful, encouraging communication pattern. The *respectful and encouraging interactions* variable focused on communication patterns that revealed respect for students and conveyed confidence in student capability.

Teachers' Words Revealed Respect and Encouragement for Students

Stepping inside the classroom one is greeted with signs that read, "This is a Positive Thinking Area," and "When you believe in yourself, anything is possible." This classroom is one of the many eMINTS classrooms where positive teacher-student relationships constitute a vital factor influencing the behavior of all students. Well-behaved, high-achieving students typically experience positive interactions with teachers.¹⁸ Even children who struggle to behave appropriately need educators who continue to express warmth and caring.¹⁹

Evaluators witnessed positive, genuine, warm interactions in the classrooms with effective behavior management. Teachers were respectful and encouraging to students and students were respectful to their teachers, to their peers and to visitors.

In 2003, the majority of eMINTS teachers remained respectful and encouraging to students. Teachers encouraged students to have opinions and to share them. They made effort to include everyone in the classroom community. During an observation, one child never raised a hand to answer a question. When the teacher called on the student and the student attempted a response, the teacher said, "Thank you for being brave."

Teachers Conveyed Confidence in Student Abilities

Teachers positively influenced their classroom climates when they conveyed confidence in the abilities of all students. One teacher who unfailingly voiced confidence in the students responded to a unique idea, "That's right. You teach me and I teach you."

¹⁷ Jones, V. and Jones, L. (2001). *Comprehensive classroom management: Creating communities of support and solving problems* (p. 78-81). Boston: Allyn & Bacon.

¹⁸ Good, T.L. & Brophy, J.E. (2000). *Looking in classrooms* (p. 81). New York: Harper Collins.

¹⁹ Jones, V & Jones L. (2001). *Comprehensive classroom management: Creating communities of support and solving problems* (p. 78-81). Boston: Allyn & Bacon.

Valuing academics sends a clear message that all pupils can learn and is part of a positive class environment.²⁰

The following examples illustrate ways that eMINTS teachers support student performance:

When a student was struggling, one of the teachers advised, “Try all the things you know first.” (2002)

A teacher describes the difference in her teaching. Previously, students were given “one little step before the next little step and the next little step, not expecting them to function on their own.” Now the teacher is trying to make the students more independent thinkers. (2003)

Another teacher repeats the same message found on a classroom poster to a child who didn’t get a correct answer, “Making a mistake is OK; we are learning.” (2002)

When a student said that a project was too difficult, the teacher directed the student to the signage in the room. The poster read: “never, never, ever, ever, ever, ever give up.” (2003)

When two students were struggling, the teacher remarked, “I know it’s hard, but you can do it,” and “Try this one again, you’re almost there.” (2002)

When other students wanted to complete a task for their classmate, the teacher said, “She can do it, give her a chance. One more time, [Student], you can do it.” (2003)

Evaluators found many examples of teachers conveying confidence in students when they visited the 2003 classrooms. They witnessed confidence in students when teachers solicited student input for out-of-classroom presentations, for peer tutoring, for class responsibilities and for their informed opinions. Students presented at a school board meeting where they “took charge” and were “impressive.” Their teacher believed this experience helped “with their academics, their leadership skills, their organization, their communication skills.” In some classes, students trained in a particular area to help the rest of the class. When a student came in late or needed extra help, the teacher had the trained student tutor that classmate. In a few classes, students filled out job applications for their class jobs. The students included why they would be well suited for the jobs. Their teachers thought that process helped students gain confidence by being responsible. Teachers sometimes solicited student input for what should be included in the scoring guides for their lessons. Many times teachers gave students the opportunity to complete self-assessments using their scoring guides.

²⁰ Eccles, J.S., Wigfield, A., & Schiefele, U. (1998). *Handbook of Child Psychology: Vol. 3, Social, emotional and personality development* (p. 1017-1095). New York: Wiley.

Cooperative learning is central to the eMINTS instructional model. Students cooperating and learning from each other was a bright spot again in the 2003 observations. One class posted a list of the class experts and their areas of expertise. It was the norm for classmates to help each other. When a student needed assistance, another student responded with, “I know what to do.” During the second year of observations, many eMINTS teachers stated that they were doing a lot more collaboration than they had done the previous year. The following are some selected comments on cooperative learning from the second-year visits:

Students ask three other classmates their question before approaching me. I adopted this from another eMINTS teacher in the cluster. This increases cooperative learning and employs . . . higher level thinking skills. I’ve seen problem solving improve [the students have] evolved and improved at a faster pace than last year.

I like the kids to work in groups. Number one, just for the pure fact of getting along. And, kids have to be taught how to work together . . . we do a lot of modeling . . . It’s a lot of team work and a lot of team building . . . hopefully, they have a good sense of how to work with a group and the sharing of ideas.

Through eMINTS I’ve learned more about how the kids need to be accountable. Working on the skills that it takes to be in a team—the communication, manners in a group. A lot of them (students) aren’t used to being listened to. And, some don’t even come to the group speaking nicely . . . so we work on that too.

I think the most important aspect for these kids is the cooperation. Yes, the MAP is important, but you know what, the MAP is the MAP. I think that getting along with each other, the self-esteem, that is very much important to them.

Teachers Supported Questioning by Students

Teacher responses to student questions offered insight into their attitudes about active learning, creating a caring environment and encouraging risk-taking. When teachers allowed students to question opinions and justify their responses, they supported higher level thinking. Teachers used probes effectively to help students arrive at answers. Examples of probes drawn from winter 2003 included the following: “Refresh my memory” and “Give me an example,” when students gave answers that could use more detail. When a student wanted an answer, the teacher said, “Maybe we can figure out why there is a difference there. What do you think?” Some teachers collaborated with their students on questions by using the KWL approach. The acronym stands for what the students already *know*, what they *want* to know and finally what they *learned*. Many teachers used this approach to help explore student interest in a topic. Skilled eMINTS teachers went beyond the basic KWL to ask students what connections they could make

with their prior learning, what project could be formulated, what evaluation methods could be used and what other audiences might be interested in what they learned.

Many teachers reported getting better at questioning and responding to questions the second year. The interviews captured these changes. One teacher reported, “I think I’m much more aware of how I question the kids. I don’t just give them the answers or show them where it is, but I guide them through questioning more than I did.” Another teacher also noticed how her reaction to questioning changed in the second year. The teacher said, “I’m hoping by the end of the year that they’ll (students) be less dependent and more apt to find out on their own the answers to the questions that they have, rather than always asking me.”

In the observations conducted in 2003, some teachers did not use questioning effectively. In one class when students wanted to explore something a little more, the teacher said, “If we stop for questions and comments, we’ll never get through this. Let’s get through this.” In a second class, when a question was asked, the teacher responded that the student did not need to know.

In a final example, where behavior management was minimally effective, the questioning proved ineffective. After the teacher solicited questions from the class, no student questions were used for the assignment. The teacher displayed five predetermined questions on the SMART Board. The teacher’s five questions were not open ended. They all began with *what is* or *where is*. The class erupted when none of their input showed up in the assignment. This class was called down over and over again with discipline problems. The teacher used a lot of *shushing* to manage the class. One student was banging his head; students were tattling on each other; and a couple of students were running in class.

Tables 5a and 5b list the criteria established for respectful and encouraging interactions in the classroom.

Table 5a
Percentage of Respectful and Encouraging Interactions in the Classroom in
Year 1 and Year 2

| Value | Criteria | Year 1 | Year 2 |
|--------------------------|---|--------|--------|
| 0 | Mainly tense interactions heard. Children cry as a result of interaction. | 1.0 | 1.2 |
| 1 | Mainly custodial and cordial interactions heard. | 27.3 | 28.0 |
| 2 | Mainly encouraging interactions heard. Expectation that students can learn from each other and are expected to do so. | 39.4 | 28.0 |
| 3 | Encouraging and respectful interactions heard among all classroom members. Confidence voiced on student capability. Students learned from each other. | 32.3 | 42.7 |
| Total | | 100.0 | 100.0 |
| Total Number of Teachers | | 99 | 82 |
| P-Value | | | 0.3896 |

Table 5b
Changes in Frequency Between Year 1 and Year 2
Regarding Respectful and Encouraging Interaction

| Criteria | Frequency | Percent |
|---------------------------------|-----------|---------|
| No change in interactions | 44 | 53.7 |
| Positive change in interactions | 23 | 28.1 |
| Negative change in interactions | 15 | 18.3 |
| Total Number of Teachers | 82 | 100.0 |

Table 5a presents the percentages for the interaction dimension observed during the first visit to the expansion classrooms in winter 2002 and during the second observation in winter 2003. eMINTS evaluators found no significant difference in respectful and encouraging interactions between Years One and Two. Teacher-student interaction patterns varied among the teachers. Evaluators observed encouraging interactions in over 70% of the eMINTS Expansion classrooms in 2002 and 2003. An optimal interaction pattern existed in 32% of the 2002 classrooms and in over 42% of the 2003 classrooms. In these classrooms, encouraging and respectful communication patterns revealed the belief that all children could learn; teachers and students voiced confidence about the students' capacity to learn; and the students in the class spoke respectfully to each other and to their teachers. In only 1 of the 99 classrooms in winter 2002 was a tense interaction the norm. Again, in only 1 of the 82 classrooms in winter 2003 was a tense interaction the norm.

Table 5b presents the changes in frequency between the first and second observation years. In 23% of the cases, a positive movement in the area of verbal interaction was evident; about 53% of the cases did not change; and about 18% of the cases revealed a negative movement in verbal interactions. In the 23% of the cases that revealed a positive change, teachers blended warmth and caring with realistic limits. Teachers cited

professional development as one reason for the improved change. One teacher attended the school's monthly professional development experience on behavior intervention. Another teacher credited the changes to a weeklong training with Marva Collins. She said, "Marva was so amazing with her proverbs and her positive reinforcement. That just changed me." A third teacher joined a study group on differentiated instruction. That experience affected her student interactions.

In 53% of the cases, the interaction did not change. In the majority of these cases, the interaction was already positive. Three field note excerpts illustrate this point:

Like last year, each student is treated as a welcome part of the classroom. There is a poster in the class that says, "No act of kindness, however small, is ever wasted." The students were talking, with the teacher's encouragement. When a student had trouble finding an answer, the teacher said, "I bet [Student] can help you." When the student asked his fellow student, the response was "Of course." The teacher never had to raise her voice or correct a student during the observation.

Positive interaction in the classroom is the same as last year, respectful and welcoming. The students are treated with respect. She encourages the students to help each other. In the lesson, when students figure something out on their own, they have the opportunity to share it with the class. She has student experts. She tells the class to explore a little bit before they call her over. After attending a conference on *Love and Logic*, she initiated a study group in partnership with the school counselor. Two time frames are available: one before school and one after school.

Like last year, the teacher is polite and her class is polite. The class greeter directs visitors to chairs as soon as they enter the room. This is a very well disciplined class. Teacher asks questions like, "How do you think she solved her problems?" One day a week the teacher takes one student home and lets him or her spend time in a noneducational setting for hanging out and dinner.

In 18% of the cases, the interaction was not as respectful in the second year as it was in the first. The following examples illustrate counterproductive exchanges:

One young student, wearing glasses and squinting to see, said she could not see the font on the SMART Board and requested that the font be increased. The teacher denied the request, saying, "It's plenty big to see."

One student is isolated in the back of room without a computer. He asks to use the restroom several times and it is always "No" while teacher lets others go. After 45 minutes teacher tells him, "Yes." This student is never called on during the discussion although his hand is up.

Table 6a
**Correlations Between Behavior Management and
Classroom Climate Variables in Year 1**

| | Student Work Exhibited | Flexible Use of Space | Tactile Elements Provided | Physical Comfort Maintained | Respectful Interactions |
|---------------------|------------------------------|-----------------------------|---------------------------------|-----------------------------------|----------------------------|
| Behavior Management | 0.34 | 0.29 | 0.27 | 0.23 | 0.76 |
| Number of Teachers | 99 | 99 | 97 | 99 | 99 |
| P-Value | 0.0006 | 0.0029 | 0.0073 | 0.0195 | <0.0001 |

Table 6b
**Correlations Between Behavior Management and
Classroom Climate Variables in Year 2**

| | Student Work Exhibited | Flexible Use of Space | Tactile Elements Provided | Respectful Interactions |
|---------------------|---------------------------|--------------------------|---------------------------------|----------------------------|
| Behavior Management | 0.27 | 0.29 | 0.34 | 0.72 |
| Number of Teachers | 82 | 82 | 82 | 82 |
| P-Value | 0.0154 | 0.0080 | 0.0017 | <0.0001 |

Positive Classroom Climate Supports Effective Behavior Management

The four dimensions of the eMINTS Classroom Climate Scale remained positively correlated with effective behavior management strategies teachers employed as part of their instructional activities. These correlations remained in 2002 and 2003.

Tables 6a and 6b establish the correlations. The data in Table 6a shows a moderate correlation in winter 2002 between the effective behavior management variable and four physical attributes of the classroom: the exhibition of student work, the provision of flexible classroom work space, the availability of soft and tactile elements in classrooms and the provision of adequate, heat, light and ventilation in the eMINTS classrooms. The remaining variable addresses the character of the interactions between teachers and students.

The results of this analysis show that the strongest correlation exists between effective behavior management and the character of the interactions between teachers and students. This correlation suggests that there are positive classroom behavior consequences for teachers who adopt a respectful and encouraging interaction style with their students. The character of the interaction in the classroom impacts how well students are able or willing to regulate their behavior. Teacher attitudes and strategies that treat students as valued

members of the classroom are beneficial for the students, the teacher and the rest of the classroom community. Secondly, the other four variables were significant. These differences are important and contribute to the overall positive climate of an eMINTS classroom.

The data in Table 6b shows a moderate correlation in winter 2003 between the effective behavior management variable and three physical attributes of the classroom: the exhibition of student work, the provision of flexible classroom work space and the availability of soft and tactile elements in classrooms. The remaining variable addresses the character of the interactions between teachers and students.

As was the case in the first year of classroom observations, the results of this analysis show that the strongest correlation exists between effective behavior management and the character of the interactions between teachers and students. This correlation suggests that teachers who improve their classroom climates through respectful interactions yield positive behavior consequences. That the character of the interaction in the classroom impacts how well students are able or willing to regulate their behavior was supported by the data from the return visits to the expansion classrooms.

Teacher attitudes made a difference. In the 2003 visit, some teachers identified their classes as “discipline problems.” One teacher predetermined that, “We’re going to end up with all kinds of difficulties.” This teacher went on to say, “Maybe that’s a negative way of looking at it, but I don’t see how things are going to get better.” This attitude contrasts strongly with the eMINTS teachers who encouraged particular behaviors by modeling, dialoguing and providing opportunities to practice appropriate behaviors.

Differences in Classroom Climate Dimensions by eMINTS Lesson Typology

The previous analyses have shown a consistent positive correlation between indicators of effective behavioral management and the characteristics of the physical classroom environment measured by the Classroom Climate scale. The analysis in this section examines the role of teacher instructional practices in establishing and maintaining a positive classroom climate.

Tables 7a and 7b present mean differences in the classroom climate factors according to the different levels of the eMINTS Lesson Typology.²¹

²¹ See *A General Typology of eMINTS Lessons* on the eMINTS web site: <http://www.emints.more.net/evaluation>.

Table 7a
Mean Differences in Classroom Climate by Facilitated vs. Nonfacilitated Lessons in Year 1

| | Number of Teachers | Mean | Standard Deviation | P-Value | Difference in Means |
|--------------------------------------|--------------------------|------|-----------------------|---------|------------------------|
| <u>Student Displays</u> | | | | | |
| Student-Centered Facilitated Lessons | 43 | 1.55 | 1.16 | 0.0022 | 0.70 |
| Other Lessons | 56 | 0.85 | 1.05 | | |
| All Lessons | 99 | 1.16 | 1.14 | | |
| <u>Flexible Space</u> | | | | | |
| Student-Centered Facilitated Lessons | 43 | 2.27 | 0.70 | 0.0238 | 0.33 |
| Other Lessons | 56 | 1.94 | 0.72 | | |
| All Lessons | 99 | 2.09 | 0.72 | | |
| <u>Tactile Elements</u> | | | | | |
| Student-Centered Facilitated Lessons | 43 | 1.27 | 0.90 | 0.3069 | 0.16 |
| Other Lessons | 56 | 1.00 | 1.74 | | |
| All Lessons | 99 | 0.95 | 0.90 | | |
| <u>Physical Comfort</u> | | | | | |
| Student-Centered Facilitated Lessons | 43 | 2.79 | 0.46 | 0.0237 | 0.26 |
| Other Lessons | 56 | 2.53 | 0.60 | | |
| All Lessons | 99 | 2.64 | 0.55 | | |
| <u>Encouraging Interactions</u> | | | | | |
| Student-Centered Facilitated Lessons | 43 | 2.51 | 0.63 | <0.0001 | 0.85 |
| Other Lessons | 56 | 1.66 | 0.72 | | |
| All Lessons | 99 | 2.03 | 0.80 | | |
| <u>Behavior Management</u> | | | | | |
| Student-Centered Facilitated Lessons | 43 | 2.58 | 0.58 | <0.0001 | 0.83 |
| Other Lessons | 56 | 1.75 | 0.69 | | |
| All Lessons | 99 | 2.11 | 0.76 | | |

Table 7b
Mean Differences in Classroom Climate by Facilitated vs. Nonfacilitated Lessons in Year 2

| | Number of Teachers | Mean | Standard Deviation | P-Value | Difference in Means |
|--------------------------------------|--------------------------|------|-----------------------|---------|------------------------|
| <u>Student Displays</u> | | | | | |
| Student-Centered Facilitated Lessons | 43 | 2.07 | 0.96 | 0.0124 | 0.61 |
| Other Lessons | 39 | 1.46 | 1.04 | | |
| All Lessons | 82 | 1.78 | 1.04 | | |
| <u>Flexible Space</u> | | | | | |
| Student-Centered Facilitated Lessons | 43 | 2.42 | 0.73 | 0.0016 | 0.65 |
| Other Lessons | 39 | 1.87 | 0.73 | | |
| All Lessons | 82 | 2.16 | 0.77 | | |
| <u>Tactile Elements</u> | | | | | |
| Student-Centered Facilitated Lessons | 43 | 1.44 | 0.88 | 0.0023 | 0.62 |
| Other Lessons | 39 | 0.82 | 0.91 | | |
| All Lessons | 82 | 1.15 | 0.94 | | |
| <u>Encouraging Interactions</u> | | | | | |
| Student-Centered Facilitated Lessons | 43 | 2.72 | 1.16 | <0.0001 | 1.10 |
| Other Lessons | 39 | 1.62 | 0.81 | | |
| All Lessons | 82 | 2.22 | 1.14 | | |
| <u>Behavior Management</u> | | | | | |
| Student-Centered Facilitated Lessons | 43 | 2.58 | 0.58 | <0.0001 | 0.84 |
| Other Lessons | 39 | 1.74 | 0.75 | | |
| All Lessons | 82 | 2.18 | 0.78 | | |

As seen in Table 7a, of the two groups of lessons, student-centered facilitated lessons and other nonfacilitated lessons, there was a clear distinction in the classroom climates. The teachers of facilitated lessons were remarkable in that they consistently attended to four of the five climate factors deemed important in behavior management. Many of these teachers had an item displayed from everyone in their classes that matched a current class topic or theme. They utilized space to its best advantage. Traffic patterns allowed smooth movement and there was space for students to work on activities away from their assigned desks. Their classrooms were places of physical comfort with adequate lighting, ventilation and temperature. The clearest difference between the student-centered facilitated classrooms and the teacher-directed nonfacilitated classrooms was in the area of respectful and encouraging interactions. A look inside these classrooms finds teachers encouraging further dialogue, being careful to answer questions in ways that encourage growth and encouraging student potential. Students in these classes were kind and

encouraging to each other. There is a significant difference for all measures, except the soft, sensory, tactile elements.

In Table 7b, of the two groups of lessons, student-centered facilitated lessons and other nonfacilitated lessons, there was, again, a clear distinction in the classroom climates. The teachers of facilitated lessons adhered to all four climate factors important in improving student behavior. These classrooms consistently featured student work. The use of space supported curricular goals. Students could complete tasks individually, collaboratively and experientially. The most significant difference in practice between the student-centered facilitated teachers and the teacher-directed nonfacilitated teachers was in the area of establishing a caring community by respectful and encouraging interactions.

Table 8 shows the mean differences on the behavior management factor for the 82 teachers observed in each year of the expansion program. The first two columns of this table show the classification of the teacher in terms of the eMINTS Lesson Typology in each year. Teachers who became more facilitated between Years One and Two, for example, teachers observed teaching a teacher-centered or hybrid lesson in Year One and teaching a student-centered facilitated lesson in Year Two, scored an average of 0.42 points higher on the behavior management factor in Year Two. Teachers who became less facilitated, for example, teachers observed teaching a student-centered facilitated lesson in Year One and teaching a teacher-centered or hybrid lesson in Year Two, scored lower on the behavior management factor. In contrast, those teachers who did not change, whether the evaluators observed them teaching a student-centered facilitated lesson or not, also did not change in their scores on the behavior management factor. These results support the contention that a positive classroom climate, the application of constructivist, inquiry-based instructional practices and the use of effective behavior management strategies are closely related to each other.

Table 8
Mean Differences in Behavior Management from Year 1 to Year 2
by Teacher-Typology Classification

| Year 1 | Year 2 | Number of Teachers | Value in Year 1 | | Value in Year 2 | | Difference | |
|--------------|-------------|--------------------------|-----------------|-----------------------|-----------------|-----------------------|------------|-----------------------|
| | | | Mean | Standard Deviation | Mean | Standard Deviation | Mean | Standard Deviation |
| Facilitated | Facilitated | 29 | 2.66 | 0.55 | 2.72 | 0.45 | 0.06 | 0.45 |
| Other | Facilitated | 14 | 1.86 | 0.77 | 2.29 | 0.72 | 0.42 | 0.85 |
| Facilitated | Other | 7 | 2.43 | 0.78 | 2.14 | 0.90 | -0.28 | 1.30 |
| Other | Other | 32 | 1.66 | 0.70 | 1.66 | 0.70 | 0.00 | 0.80 |
| All Teachers | | 82 | 2.11 | 0.80 | 2.18 | 0.78 | 0.07 | 0.78 |
| P-Value | | | | <0.0001 | | <0.0001 | | 0.2006 |

Accounting for Experience: Differences Between eMINTS Mentor and Mentored

Teachers

The eMINTS Expansion program used existing eMINTS teachers as mentors for new eMINTS teachers. In the first year of the expansion program, the existing teachers participated in a professional-development program designed to support their roles as mentors. Tables 9 and 10 refer to existing teachers as *Mentor Teachers* and to new teachers as *Mentored Teachers*.

This programmatic structure raises a number of questions about the effectiveness of the mentoring experience as it was implemented in the expansion program. Tables 9 and 10 address two questions. First, were there differences between the climates of the classrooms of mentor and mentored teachers? Second, is there evidence that the observed classroom climates substantially improved?

Table 9 compares the mean scores on the classroom climate factors by teacher mentor-status for each year of the expansion project. The analysis revealed three statistically significant differences between the classrooms of mentor and mentored teachers: the encouraging interactions factor in the first year of the project and the behavior management factor in both years. In each case, the classrooms of mentor teachers were rated higher than the classrooms of mentored teachers.

Table 9
Mean Difference in Classroom Climate Factors by Mentor Status and Year

| | Number of Teachers | Year 1 | | Year 2 | |
|---------------------------------|--------------------|--------|--------------------|--------|--------------------|
| | | Mean | Standard Deviation | Mean | Standard Deviation |
| <u>Student Displays</u> | | | | | |
| Mentor Teachers | 36 | 1.22 | 1.14 | 1.83 | 0.97 |
| Mentored Teachers | 45 | 1.13 | 1.14 | 1.71 | 1.10 |
| All Teachers | 81 | 1.17 | 1.14 | 1.77 | 1.04 |
| P-Value | | | 0.6650 | | 0.6020 |
| <u>Flexible Space</u> | | | | | |
| Mentor Teachers | 36 | 2.06 | 0.80 | 2.19 | 0.79 |
| Mentored Teachers | 45 | 2.20 | 0.66 | 2.11 | 0.78 |
| All Teachers | 81 | 2.15 | 0.72 | 2.15 | 0.78 |
| P-Value | | | 0.4620 | | 0.6340 |
| <u>Tactile Elements</u> | | | | | |
| Mentor Teachers | 36 | 0.94 | 0.85 | 1.11 | 0.95 |
| Mentored Teachers | 45 | 1.11 | 1.48 | 1.16 | 0.95 |
| All Teachers | 81 | 1.04 | 1.23 | 1.14 | 0.95 |
| P-Value | | | 0.5490 | | 0.8350 |
| <u>Encouraging Interactions</u> | | | | | |
| Mentor Teachers | 36 | 2.19 | 0.79 | 2.28 | 0.91 |
| Mentored Teachers | 45 | 1.84 | 0.80 | 1.98 | 0.81 |
| All Teachers | 81 | 2.01 | 0.81 | 2.11 | 0.87 |
| P-Value | | | 0.0380 | | 0.1220 |
| <u>Behavior Management</u> | | | | | |
| Mentor Teachers | 36 | 2.28 | 0.78 | 2.39 | 0.73 |
| Mentored Teachers | 45 | 1.96 | 0.80 | 2.00 | 0.80 |
| All Teachers | 81 | 2.11 | 0.80 | 2.17 | 0.79 |
| P-Value | | | 0.0540 | | 0.0260 |

On the encouraging interactions factor, there are significant differences in the first year of the program, but not in the second year. This suggests that the two groups of classrooms are becoming more alike in the ways that teachers interact with students.

On the behavior management factor, the classrooms of mentor teachers were rated higher than those of mentored teachers in each year.

Table 10
Mean Change in Classroom Climate Factors by Mentor Status and Year

| | Number of Teachers | Year 1 | | Year 2 | | Difference | | P-Value |
|---------------------------------|--------------------|--------|--------------------|--------|--------------------|------------|--------------------|---------|
| | | Mean | Standard Deviation | Mean | Standard Deviation | Mean | Standard Deviation | |
| <u>Student Displays</u> | | | | | | | | |
| Mentor Teachers | 36 | 1.22 | 1.15 | 1.83 | 0.97 | 0.61 | 1.20 | 0.0040 |
| Mentored Teachers | 45 | 1.13 | 1.14 | 1.71 | 1.10 | 0.58 | 1.44 | 0.0100 |
| All Teachers | 81 | 1.17 | 1.14 | 1.77 | 1.04 | 0.60 | 1.33 | 0.0010 |
| <u>Flexible Space</u> | | | | | | | | |
| Mentor Teachers | 36 | 2.06 | 0.79 | 2.19 | 0.79 | 0.13 | 0.90 | 0.3600 |
| Mentored Teachers | 45 | 2.20 | 0.66 | 2.11 | 0.78 | -0.09 | 0.85 | 0.4860 |
| All Teachers | 81 | 2.14 | 0.72 | 2.15 | 0.78 | 0.01 | 0.87 | 0.8990 |
| <u>Tactile Elements</u> | | | | | | | | |
| Mentor Teachers | 36 | 0.94 | 0.86 | 1.11 | 0.95 | 0.17 | 0.97 | 0.3100 |
| Mentored Teachers | 45 | 1.11 | 1.48 | 1.16 | 0.95 | 0.05 | 1.71 | 0.8620 |
| All Teachers | 81 | 1.04 | 1.24 | 1.14 | 0.95 | 0.10 | 1.42 | 0.5330 |
| <u>Encouraging Interactions</u> | | | | | | | | |
| Mentor Teachers | 36 | 2.19 | 0.79 | 2.28 | 0.91 | 0.09 | 0.84 | 0.5560 |
| Mentored Teachers | 45 | 1.84 | 0.80 | 1.98 | 0.81 | 0.14 | 0.87 | 0.3090 |
| All Teachers | 81 | 2.00 | 0.81 | 2.11 | 0.87 | 0.11 | 0.85 | 0.2440 |
| <u>Behavior Management</u> | | | | | | | | |
| Mentor Teachers | 36 | 2.28 | 0.78 | 2.39 | 0.73 | 0.11 | 0.58 | 0.2540 |
| Mentored Teachers | 45 | 1.96 | 0.80 | 2.00 | 0.80 | 0.04 | 0.93 | 0.7500 |
| All Teachers | 81 | 2.10 | 0.80 | 2.17 | 0.79 | 0.07 | 0.79 | 0.3990 |

Table 10 considers whether these different groups of classrooms improved in their classroom climate ratings between the first and second years of the program. While all groups of classrooms improved in their ratings on all classroom climate factors between the first and second years of the program, only the ratings on the student-displays factor were statistically significant.

These results suggest several things. First, no differences existed between the classrooms of mentor and mentored teachers in the purely physical aspects of the classroom climate: the displays of student work, the use of flexible space arrangements and the provision of soft work areas. Differences in the character of interactions between teachers and students were apparent, but evaluators noted these differences only in the first year of the program. A consistent difference in the behavior management factor existed, suggesting that the teachers in mentor classrooms were more likely to apply effective behavior management techniques than the mentored teachers.

Classroom climate ratings appear to have improved between the first and second years of the program, although these differences are not large enough to be significant. The one exception to this lack of significance is the display of student work. The amount of student work on display increased significantly for all groups of classrooms and teachers.

Overall, these results do not suggest that the mentoring aspects of the expansion program had much impact on the different aspects of the classroom climate scale. This interpretation does not necessarily mean that the mentoring structure of the expansion program was ineffective in assisting new eMINTS teachers in implementing the program.

Summary

This systematic review of the classroom climate in eMINTS Expansion classrooms confirms the linkage between classroom climate and student behaviors. Classroom observations, field notes and teacher interviews bear out the association between effective behavior management and four factors: exhibiting student-produced work; arranging space for flexible use; providing elements that afford a soft, sensory, tactile option; and interacting in a respectful and encouraging manner. Of particular significance was the latter area of crafting a caring relationship in the classroom through interactions that were both respectful and encouraging. Classroom environments demonstrated the potential to enhance and support positive student behavior.

The results from both years of the expansion program show that teachers who apply the instructional practices endorsed by the eMINTS program have higher ratings on the classroom climate scale. In addition, those teachers who adopted the student-centered, facilitated instructional practices endorsed by eMINTS increased their use of effective behavior management strategies. Teachers observed teaching a student-centered, facilitated lesson in the first year of the program and observed teaching in a less facilitated manner in the second year decreased their use of these effective behavior management strategies. This finding suggests that instructional practices and effective behavioral strategies are related to one another.

There is little evidence that the structure of the expansion program, for example, the creation of a group of mentor teachers in each expansion building, was particularly effective in improving classroom climate. While classroom climate ratings for all classrooms and teachers improved over the two years of the program, there is little evidence to suggest that this improvement is due to new eMINTS teachers working with mentor teachers.

Once again, as demonstrated by last year's findings, successful, student-centered, facilitative teachers were more likely to use effective behavior management skills and encourage positive student interactions. In the cohort of eMINTS teachers employing inquiry-based cooperative learning strategies in their classrooms, an overall rate of adherence to classroom climate practices was found regarding all four factors that influenced classroom behavior. Further studies should demonstrate the benefits that may be derived from increased professional development in the area of classroom climate.

This report adds to the general eMINTS evaluation findings that student-centered facilitative classrooms are more likely to employ inquiry-based cooperative-learning strategies, more likely to attain higher MAP scores and more likely to maintain well-behaved, smooth-functioning environments. Successful eMINTS teachers demonstrate respect and caring toward students while holding them to high expectations for behavior and high expectations for academic performance. In addition, this report demonstrates the enormous variability in the implementation of eMINTS practice by individual teachers. Although all the teachers in this report benefited from the same professional development on the eMINTS instructional model, teachers' practice in their classrooms varied within the dimensions. Further research is warranted in understanding the eMINTS teacher-typology classification least likely to adopt the eMINTS instructional model. For example, a second-year eMINTS teacher, not showing any movement toward the eMINTS philosophy, identified her teaching style as *back to basics*. Strategies need to be investigated on ways to more effectively encourage nonfacilitated eMINTS teachers to improve their practice or to more effectively identify those teachers not inclined to change and invest the time and effort elsewhere. Given the central importance of behavior management in the classroom, improving levels of competencies related to the classroom environment seems a prudent investment of teacher time.