

# Attitudes Toward a Multiple Intelligences Curriculum

GWENDOLYN METTETAL  
CHERYL JORDAN  
Indiana University South Bend

SHERYLL HARPER  
Penn-Harris-Madison School Corporation

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**ABSTRACT** In this study, the impact of a multiple intelligences (MI) curriculum in a large suburban elementary school was examined. Classes were observed and parents were surveyed. Students, teachers, parents, and administrators were interviewed. Qualitative techniques were used in analyzing the data derived from the study. Three themes emerged from the data: (a) students, teachers, and parents were very positive about the concept of multiple intelligences; (b) they were positive about schoolwide implementation, including flow time, activity room, and enrichment clusters; and (c) classroom implementation of MI concepts was uneven across classrooms. Further implementation of the MI curriculum during a follow-up year is described, data from standardized testing are presented, and the importance of the multiple intelligences concept in changing teacher and student attitudes is highlighted.

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Gardner's (1983, 1993) theory of multiple intelligences (MI) has been embraced by a number of educators, and curricula developed on the basis of his theory have been implemented at a number of schools. In this article, we describe the attitudes of the teachers, students, and parents in a school that is in the midst of a change from a traditional curriculum to one based on the theory of multiple intelligences. We also report standardized test scores from the state achievement test. We suggest that the acceptance of the concept of multiple intelligences has a positive impact on student learning, beyond the impact of the actual MI curriculum.

## *The Theory of Multiple Intelligences*

Gardner's (1983, 1993) theory of multiple intelligences suggests an entirely new way of thinking about intelligence. Instead of a general *g* factor, or unidimensional theory of intelligence, Gardner proposed seven different domains of intelligence, each of which operates more or less independently. That is, a person can be high or low in any intelligence, regardless of his or her level on the other six domains. Gardner proposed those seven domains on the basis of evidence of independent abilities described in a wide-ranging literature, which included studies of cognitive

ability, organic brain pathology, special populations such as prodigies and the learning disabled, and factor-analytic studies of human cognitive ability. Although our traditional school curriculum has emphasized verbal and logical-mathematical skills, Western culture values all seven domains, as is evidenced by the appreciation shown for the types of intelligence required by athletes (bodily-kinesthetic), musicians (musical), and corporate leaders (interpersonal).

Verbal and logical-mathematical intelligences correspond closely to the traditional intelligences measured by intelligence tests. Verbal intelligence refers to the capacity to use words effectively, including a sensitivity to the sounds and rhythms of words. Logical-mathematical intelligence includes traditional analytical skill as well as logical reasoning ability. These are the intelligences most closely associated with traditional classroom practice.

Musical, spatial, and bodily-kinesthetic intelligences are part of the noncore curriculum in most schools through music, art, and physical education classes and extracurricular programs. Musical intelligence refers to the ability to appreciate and produce music. Spatial intelligence includes the ability to perceive the visual-spatial world accurately and the ability to visualize and to orient objects and oneself in space. Bodily-kinesthetic intelligence refers to the ability to control the body's movement in fine-motor or gross-motor patterns. That intelligence includes coordination, speed, and dexterity.

The inter- and intrapersonal intelligences reflect a person's awareness of self and others. Those high in interpersonal intelligence are empathetic and may be highly aware of others' nonverbal cues. They have an understanding of human relationships. Intrapersonal intelligence refers to one's ability to understand oneself and to act adaptively on the basis of that knowledge. Self-esteem and self-discipline are signs of intrapersonal intelligence.

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*Address correspondence to Gwendolyn Mettetal, Division of Education, Indiana University South Bend, Box 7111, South Bend, IN 46634. Electronic mail may be sent via Internet to gmettetal@iusb.edu.*

### *Implementations of Multiple Intelligences Theory*

The MI theory has obvious educational implications, and several schools have restructured their curricula with its domains in mind. The Key School in Indianapolis (Blythe & Gardner, 1990), the Mather School in Boston (Hatch, 1993), and the New City School in St. Louis (Hoerr, 1994) are three examples of schools that have used Gardner's theory in reforming their curricula. Each school draws heavily from Gardner to inspire and inform its curriculum, and many books are now available to aid in curriculum design (e.g., Armstrong, 1994; Campbell, Campbell, & Dickinson, 1996; Lazear, 1991). Gardner has not endorsed any particular program, however. Rather, Gardner (1993) encouraged each school to implement MI theory in a way that would work for its particular situation, and as a result of each school's uniqueness, the multiple intelligences curriculum implemented may vary widely from school to school.

In the present study, we investigated the impact of one school's MI curriculum on teachers, students, and parents. The research question we addressed was: What are the attitudes of teachers, students, and parents toward MI in general, and toward this curriculum in particular?

### *The School and the Curriculum*

Farmington Elementary (a pseudonym), located in north central Indiana, is a K-5 elementary school with 520 students. Part of a suburban school district, the school population is almost entirely Caucasian and is economically quite diverse; it includes residents of an upper-middle-class subdivision, residents of the county's largest mobile home park, and farming families. As a measure of economic status, we examined the number of students who qualified for the federal school lunch program. Only 17% participated in the lunch program in 1991-1992, but that percentage increased to 43% during 1994-1995, the year that the MI curriculum was implemented. The percentage declined to 36% during the 1995-1996 school year, but that percentage was still high compared with previous years and compared with other schools in the school district.

For many years, Farmington students from first grade through fifth grade changed classes for each subject. Reading and math classes were ability grouped, whereas home-room, science, social studies, music, physical education, and other subjects were heterogeneously grouped. The gifted and talented program pulled top students out of their regular classrooms for periods of enrichment. The curriculum could be described as traditional.

In the fall of 1992, Sheryll Harper became principal at Farmington Elementary. She was strongly committed to the goal of meeting the needs of all of the students. After visiting several schools that implement an MI curriculum, including the Key school in Indianapolis, and after much reading and discussion, Harper and her faculty took steps to implement a multiple intelligences curriculum at Farming-

ton. The planning process began during the 1993-1994 school year, and implementation began during the 1994-1995 school year. Most of the formal observational, interview, and survey data for the present study were collected in the spring of 1995. Further informal observations and interviews and standardized test data were available for the 1995-1996 school year.

Some of the changes to an MI curriculum, such as heterogeneously grouped self-contained classes, were school-wide and thus were the same for all students. A block scheduling plan (called *flow time*) grouped all of the children's outside activities, such as library, music, activity room, and gym, into two half-day sessions, leaving large blocks of uninterrupted class time on the other days. Flow also let all teachers in a grade level share planning time. An activity room contained games and activities that stimulated each of the seven intelligences. Enrichment clusters brought together children of all ages with a common interest for four 1-hr sessions on topics ranging from folk dancing to storytelling.

Other changes took place within the individual classroom, and those changes were more specific to a particular teacher or group. Some classes had *choice* centers where students could work on activities in which each intelligence is used. Some teachers consciously incorporated teaching to multiple intelligences into their lessons, and a few also allowed students a choice in how they would demonstrate knowledge of a unit.

## **Method**

### *Investigators*

When qualitative research methods are used, one must recognize the role of researchers in constructing the meaning of data and, thus, must specify the perspectives of those researchers (Altheide & Johnson, 1994). The qualitative approach encourages researchers to become participant-observers, and, to varying degrees, the present researchers followed that advice. There were three main investigators for this study. The lead investigator, Gwendolyn Mettetal, is an educational psychologist and the parent of children at Farmington Elementary. She has been involved in volunteer parent activities at Farmington for several years and has provided a number of in-service training sessions to teachers on a variety of topics (but not multiple intelligences).

The second researcher, Cheryl Jordan, was a graduate student in education and a substitute teacher in the local high school at the time this research was conducted. She was new to this school system and new to the elementary school level, so she provided a fresh eye toward the data. She was particularly involved in classroom observations and conducted all teacher interviews.

The third researcher was Sheryll Harper, the principal at Farmington Elementary. She compiled the artifacts (e.g., test scores, attendance data, and newsletters) and provided

detailed information about the implementation and goals of the restructuring.

### *Procedures*

In the present study we combined several methods of data collection, including observations, interviews, and surveys. Following the suggestions of Denzin (1988) and Calhoun (1994), we placed an emphasis on the triangulation of data as a method of ensuring their validity. Most of the data reported here were gathered at the end of the implementation year, throughout the spring of 1995. However, there were continuing informal observations and conversations by Mettetal and Harper during the following year. That data will be described in the Discussion section.

*Interviews.* In-depth interviews were conducted with members from all relevant populations. Harper and the gifted-student coordinator, who was instrumental in setting up the program, were interviewed four times. A total of 26 teachers representing Grades 1 through 5 were interviewed in grade-level groups for approximately an hour. Several groups needed extra meetings to complete their discussions. Six parents were interviewed in three separate groups for 1 hr each. Finally, 129 children from Grades 1 through 5 were interviewed in small groups for about 15 min each. In total, 23 hr were spent in interviews.

Interviews were semistructured. The topics covered included multiple intelligences, the activity room, and enrichment clusters. For each topic, interviewees were asked what the topic was about, how they liked it, why they thought it had been implemented, and if they had any ideas on how to improve it. All interviewees except Harper and Pattison were assured that their names would not be used. Interviews were audiotaped and transcribed.

Immediately following each interview, Mettetal or Jordan wrote summaries of the major ideas expressed by the participants, incorporating impressions gained from nonverbal behaviors. Those summaries were used, along with the field notes and tape transcriptions, in the qualitative analysis.

*Observation.* We used a participant-observer method to observe classes from each grade level. Jordan and Mettetal participated as classroom volunteers, helping out as directed by the teacher. After every session (about 1 hr), they wrote their observation notes. In all, seven classes were observed on 15 occasions. We also observed flow, the activity room, enrichment clusters, teacher in-services, "Breakfast with the Principal" for parents, field day, and many other formal and informal activities. In total, we observed formally for 50 hr and informally for many more.

*Survey.* We sent home to parents an anonymous survey that asked their views on the same aspects of the curriculum that the interviews had elicited as well as general opinions about the school. Some questions referred to a particular child, and parents were instructed to answer with their "most unique" child in mind. The scale had 42 statements, for which the responses could be *strongly agree*, *agree*, *neu-*

*tral or don't care*, *disagree*, or *strongly disagree*. Seventeen of the questions, those concerned with multiple intelligences, flow, the activity room, and enrichment clusters, were considered for this study. Only 61 of the 400 questionnaires sent to the families were returned, many with long, written comments. Because data were missing from some of the returned questionnaires, only 56 of those were usable. According to the principal, that low return rate was typical for items sent home with children. However, the responses were very similar to information gathered from parents through interviews and during the validation procedure.

*Data analysis.* Survey responses were converted to numbers on a 5-point scale, ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Some questionnaire items were written in a negative format, and scores for those questions were reversed before the analysis so that a score of 5 represented the most positive response. Mean scores and standard deviations were calculated for each survey item. All written comments were transcribed.

Jordan and Mettetal analyzed all data (observation notes, interview transcripts, survey data, and comments on surveys) by using qualitative methods recommended by Glesne and Peshkin (1992). First, they independently reviewed the data that they had gathered and looked for emergent themes. Then, they met to discuss those themes. From that discussion, several major themes were identified. At that point, they each went back to their data to look specifically for evidence of those themes.

When the themes had been refined, they were shown to members of each participant group for validation. One teacher, 2 parents, and 2 students participated in the validation process. They agreed with all major themes and suggested only minor changes, which were incorporated.

We specifically looked for evidence of triangulation of data—that is, evidence that came from more than one group of subjects or from more than one type of data. Thus weaknesses in one type of data could be checked against other data sources. For example, parent surveys were suspect because of the low return rate. Parents in the interviews and parents in the validation process gave very similar responses, however, leading us to believe that our survey responses were representative of parent opinions.

## **Results**

Following a qualitative research format, we combined the results from observations, interviews, and surveys under the common themes that emerged from the data.

### *Theme 1: Acceptance by Everyone of the Concept of Multiple Intelligences*

The administration of Farmington School was strongly committed to the concept of MI, and the teachers seemed to embrace that theory. The MI approach provided an alternative way to think about ability level, something that was

needed as the school was "de-tracked." There seemed to be several key components to what children were told; for example, that there are many different kinds of intelligence and everyone is good in some but weak in others. Children were also told that all types of intelligence are important and that none is better than the other. These key beliefs seem to have been readily accepted by the teachers and by the children.

"I think it's a major breakthrough in the classroom, really, because you start looking at kids differently," one teacher told Jordan. Many teachers said that they no longer place children along a continuum of ability levels; rather, those teachers now think of children in terms of their MI profiles.

Students had learned about "different kinds of smart" in music class, and almost all thought that the idea that all students should learn about those differences was a good one. Only a few remembered that the MI concept had been mentioned in the regular classroom, however. They felt that the concept helped everyone feel good about the things they could do and broadened the idea of being smart. "Everyone is different, and better in some things," said a fourth-grade student.

Several students gave concrete examples about how they were smart in one area but not in another. They said that this theory helped prevent put downs. "It gets you so that you're not putting anybody down—you're not putting yourself down!" said a fifth grader.

During classroom observations, Mettetal noticed that one child seemed to be struggling in every area, from academic to behavioral. Mettetal later asked a classmate to describe the strengths of several different children. When asked about the struggling child, the student said, "Oh, she has the best handwriting in our whole class! If you need help in how to make a letter, you can go and she'll show you how to do it."

Parents were positive about the idea of multiple intelligences. On the survey form, parents were given a brief description of MI and then asked to react to the statement "I like the concept of multiple intelligences" on a scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). The mean score was 4.08 ( $SD = 1.04$ ). Most agreed that schools should teach to all of the intelligences ( $M = 3.89$ ,  $SD = 1.07$ ), and they thought that Farmington did this ( $M = 3.57$ ,  $SD = 1.01$ ).

"I believe in this totally. All children have special talents and we should take advantage of them" (parent interview). Many parents stressed that adult occupations use all of the intelligences but that school does not. Several parents mentioned that they had not been strong students in the verbal and mathematics areas but had found satisfying occupations that emphasized other intelligences.

Not surprisingly, there were strong correlations between parent survey responses on a statement such as "I like the concept of multiple intelligences" and other, more specific questions about the MI curriculum. The general attitude toward multiple intelligences correlated positively with the

questionnaire responses "Farmington teaches to all of the intelligences" ( $r = .68$ ,  $p < .001$ ), "I like the idea of the activity room" ( $r = .38$ ;  $p < .05$ ), "I like the idea of flow" ( $r = .30$ ;  $p < .05$ ), and "I like the idea of enrichment clusters" ( $r = .71$ ,  $p < .001$ ).

### Concerns

Many parents said that they had not heard anything about MI from the school or from their children. "We have heard nothing of this from the school, and little from the children," said one parent during interviews. Those parents were not aware of the practical implications of the theory, and some believed that the school should stick to the basics of the three Rs. During the focus groups, several parents said that that was the first time they had heard of the formal theory, but they were very positive about it during the ensuing discussion.

One hypothesis that might explain the positive parental attitude toward MI is that parents liked MI only because the theory catered to their "unique child." When asked to react to the statement "I have a child who is very strong in one of the nontraditional intelligences," the mean response was 3.48 ( $SD = 1.06$ ) on the 5-point scale, suggesting that over half did have a child who was strong in a nontraditional intelligence. However, there were no significant correlations between their agreement with the statement "I have a child who is very strong in one of the non-traditional intelligences" and their agreement with statements about MI in general ( $r = .16$ ) or about specific components of the MI curriculum, such as flow ( $r = .13$ ), the activity room ( $r = .12$ ), or enrichment clusters ( $r = .15$ ).

### Theme 2: Generally Positive Reactions to the Schoolwide Implementation (Flow, Activity Room, Enrichment Clusters) of the MI Curriculum

Students and parents tended to like flow scheduling, except for a few very active students who needed frequent breaks from class. One student who told Mettetal that he preferred his "specials" spread throughout the week literally bounced from chair to chair during the entire short interview. Several older students said that flow was like multiple intelligences time because you use your bodily intelligence in gym; your musical intelligence in music class; and your interpersonal, verbal, and logical intelligences in the activity room. The parent survey indicated that parents were mildly positive toward flow ( $M = 3.69$ ,  $SD = 1.26$ ) and thought that their child liked it ( $M = 3.68$ ,  $SD = 1.24$ ). They were very positive about one feature of flow: It mixed children from different classrooms ( $M = 4.36$ ,  $SD = .80$ ).

The activity room and enrichment clusters elicited a much stronger response from everyone. The teachers' first response to enrichment clusters (which they were asked to teach) was generally negative, mostly because of the time demand. After the first set of clusters was completed, how-

ever, most teachers found that they enjoyed the clusters and were very willing to teach them again. "At first, I was very pessimistic, saying, 'This is just another thing that we have to do . . . there is not a choice!'" said one teacher, who had just told Jordan that "it's a lot of fun!"

Students were enthusiastic about the activity room and clusters. "Oh, those are awesome!" exclaimed one fifth grader when asked about enrichment clusters. A few of the oldest children saw the connection to multiple intelligences, and over half were aware of the educational value of these activities. However, when asked why enrichment clusters had been implemented, a common answer was, "So that we could have fun!" Children said that they would like to have the time in clusters and the activity room expanded. They enjoyed having a mix of students from different classes and ages and even suggested including first graders in the next set of clusters. A second grader remarked, "I liked it. The big kids help you," whereas fifth graders commented: "You learn how to help others," and "It's good because you get to see how other ages think."

The parent survey also indicated that parents liked the idea of the activity room ( $M = 3.93$ ,  $SD = 1.06$ ) and enrichment clusters ( $M = 4.07$ ,  $SD = 1.09$ ). They thought that their children enjoyed them (activity room,  $M = 4.06$ ,  $SD = .89$ ; clusters,  $M = 4.19$ ,  $SD = 1.00$ ). However, they were not so sure that their children learned a lot during those times (activity room,  $M = 3.30$ ,  $SD = 1.22$ ; clusters,  $M = 3.68$ ,  $SD = 1.12$ ).

The parents were positive about the fact that the enrichment clusters mixed together children of all ages ( $M = 4.12$ ,  $SD = .76$ ); however, their comments did not explain why they liked the mixing. Parents may have been influenced by their children's positive attitudes toward mixed ages.

### Concerns

Teachers felt some concern about the time that children were in flow, the activity room, and enrichment clusters. They were nervous that the children were out of their care for such a long period, and this nervousness was compounded by their lack of information about what was happening during those times. One teacher told Jordan, "It bothers me . . . not knowing what's going on with them." Several were unhappy that aides were often the main supervisors during the activity room, and they worried about untrained staff supervising children in the clusters. Parents said that their children enjoyed activity room and clusters, but many were unsure about the educational benefits.

Very few parents saw the link between MI theory and the activity room or clusters. Some felt that those activities should be provided by parents or offered after school for those who needed or wanted it. "We provide these things at home for our kids, so this is just more of the same. Maybe those kids who need it could stay after school for an extended day," one parent told Mettetal. Several parents mentioned

as a preferred model an after-school enrichment program that the school used to offer.

### Theme 3: Uneven Implementation of an MI Curriculum Across Classrooms

During the 1st year, there were significant differences among teachers in how they implemented MI theory in their classrooms. Although some were trying to provide more choices to students along the lines of MI, others seemed overwhelmed by the task of designing those learning tasks and evaluations. "It's being talked about more and now we're trying to incorporate it specifically, but it's the very beginnings," said a teacher during the 1st-year interviews. In addition to in-service training, teachers were offered support and resources from the gifted-students resource teacher, who designed the activity room and the mathematics mobile. Teachers felt that the resource teacher's help was extremely valuable but that she was stretched too thin. As a consequence, some teachers felt that they were left on their own to design curriculum, and many of them were reluctant to take on the task.

Other teachers seemed excited by the opportunity to design a new curriculum. One experienced teacher transferred to Farmington because she was excited about the proposed changes. Several teachers traveled to California for an MI institute, and 1 teacher experimented with the assessment of MI for the required research project for her master's degree.

One teacher said, "Just this year, we've tried to gear some projects . . . toward every intelligence." Another teacher described consciously using her chart of the multiple intelligences as she planned curriculum. "For each unit, I try to have at least one activity for each intelligence. It's amazing how much it really helps me plan the unit!" Some teachers planned a variety of activities in which all children participated. Others provided a variety and let children choose their own activities.

Overall, we noticed the impact of proximity on the adoption of multiple intelligences concepts. That is, there were a few teachers who were actively using multiple intelligences in their classroom the 1st year, and those teachers who were nearest to them geographically (i.e., next door) were the next most likely to be using MI concepts. That suggests that modeling may play a large role in the adoption of a new curriculum by teachers. According to students, the classroom teachers rarely talked about multiple intelligences during the 1st year. Students did not indicate that classroom teachers were using MI concepts, even though we saw that several teachers were incorporating MI theory into their curricula. The failure to notice that MI concepts were being used in their classrooms probably was simply a lack of awareness on the part of the children.

Multiple intelligences theory also has implications for assessment. A few teachers let children demonstrate their knowledge from a menu of activities. In one classroom,

children could demonstrate their understanding of a book, either alone or with a group, by putting on a play, making a "diorama," writing a book report, making a mind map, letting other students interview them about the book, making a sketch that represented what they learned from the book, doing a mime, or making a "museum" of important artifacts. Students were also encouraged to think of other ways to demonstrate knowledge. Those demonstrations were given to the entire class so that students would be able to learn from each other.

## Discussion

In this article, attitudes toward the implementation of a multiple intelligences curriculum are described. Teachers, students, and parents were very positive toward the concept of multiple intelligences. Although implementation in individual classrooms was slow and somewhat uneven, the schoolwide aspects (flow time, activity room, and enrichment clusters) were liked by teachers, students, and parents. Teachers were interested in implementing the curriculum, but some needed more time to reach that goal. Modeling other teachers' methods seemed to be the most effective strategy for encouraging teachers to implement the curriculum. Teacher training and support are crucial, because classroom implementation depends on teacher initiative. In Farmington School, the total involvement of one teacher (the gifted-student resource teacher) was critical to teacher support. Several other teachers who embraced the curriculum became role models.

Perhaps the most surprising finding was the strong impact of the concept of multiple intelligences, apart from the impact of the MI curriculum. It was clear that learning about MI theory changed the thinking of teachers and students even before there was significant classroom curriculum change. Many teachers told us that they now thought of ability in an entirely different way. Students embraced the concept because it celebrated their diverse talents. In multiple intelligences theory, the issue of ability differences is reframed in a manner that accounts for diversity and promotes self-esteem. Self-esteem changes from a global evaluation to a more differentiated concept during the elementary school years (March & Shavelson, 1985; Harter, 1990). Teaching children about multiple intelligences may enhance that developmental process, giving children more opportunities to feel confident about their abilities.

In the present study, the need for communication and information between administration, teachers, and parents, particularly during times of change, has been highlighted. Many parents and quite a few teachers were concerned that they did not have enough information about different aspects of the curriculum, although that concern was not mentioned strongly enough to become a major theme. As mentioned under Theme 1, parents said that they had not been told about the multiple intelligences concept or its connection to the curriculum changes. Teachers knew about

multiple intelligences but felt that they did not know as much as they wanted about children's activities during the flow time. In most cases, parents and teachers were much more positive about the curriculum after they received more information about it.

In this study, the difficulties inherent in curriculum change have also been underscored. Although administrators and teachers agreed on the value of an MI curriculum, implementation was slow and mixed (Theme 3). Teachers had to devise their own MI activities and assessments for the content areas, and that process often took a great deal of time. Some teachers needed to see MI in action in other classrooms before they could begin to visualize activities for their own class. Even the most enthusiastic teachers emphasized the time and energy required to create and implement a new curriculum.

### *Follow-Up Year*

Although formal data collection ended in the spring of 1994, informal data collection continued throughout the following school year. Harper remained as principal, and Mettetal was still active as a participant-observer.

In that follow-up year, we found that the implementation of the MI curriculum had spread throughout the individual classrooms. Many more teachers were incorporating MI into the curriculum. Every classroom displayed a large wall chart with the MI "pie" (taken from Armstrong, 1994), and teachers were talking explicitly about MI concepts. Students seemed to be more aware of the connections between MI theory and classroom activities.

Teachers also became comfortable with the schoolwide implementations (flow, clusters, and activity room) during the 2nd year. As they learned more about what happened during those activities, they felt better about their students' participation.

### *Standardized Testing*

In Farmington School as in many others, teachers and administrators worry about the impact of school reform on traditional standardized achievement tests. Even though teachers may privately debate the validity of such tests, parents and school boards are unhappy when scores decline. In Indiana, all students at certain grade levels (3rd, 6th, and 10th) take the Indiana Statewide Testing for Educational Progress (ISTEP) test. Farmington is a K-5 school, so only the third graders are tested with ISTEP. Test administrators standardize scores by using the normal curve equivalent (NCE) so that the scores can be compared across content domains, schools, and years.

Harper was concerned about test scores because Farmington's student participation rate in the school lunch program (an index of poverty rates) had increased from 17% in 1991-1992 to 43% in 1994-1995. Poverty is correlated with low school achievement (Connell, 1994; Garcia, 1991;

Peng & Lee, 1992). Harper was also concerned about the impact of the new curriculum because the MI curriculum was not designed to increase standardized test scores. In the spring following implementation, Harper said that she hoped test scores would hold steady but that a small decline might be expected, particularly during the year that the new curriculum was first implemented.

During the week of testing in the implementation year, Harper commented on the positive attitude of students, saying that they seemed to have much more self-confidence than usual. As discussed in Theme 1, one impact of the MI curriculum was that children felt better about themselves. Harper felt that student attitude might have a positive impact on test scores.

Instead of a decline, Farmington test scores during the 1st year of implementation (the 1995 testing year) were higher than before. Scores were even higher the 2nd year (1996), when the MI curriculum was in place throughout the classrooms. When compared with other elementary schools in the same school district across the past 8 years, Farmington showed a recent dramatic increase (see Figure 1). That score increase coincided with the implementation of the MI curriculum.

*Limitations*

There were several limitations to this study. Conclusions based on one case study cannot be generalized to other contexts. Each elementary school has its own culture; for that reason, Gardner (1993) recommended that schools develop their own MI curricula to meet their own needs.

A second limitation was that most of the data were collected after the 1st year of implementation, but many changes

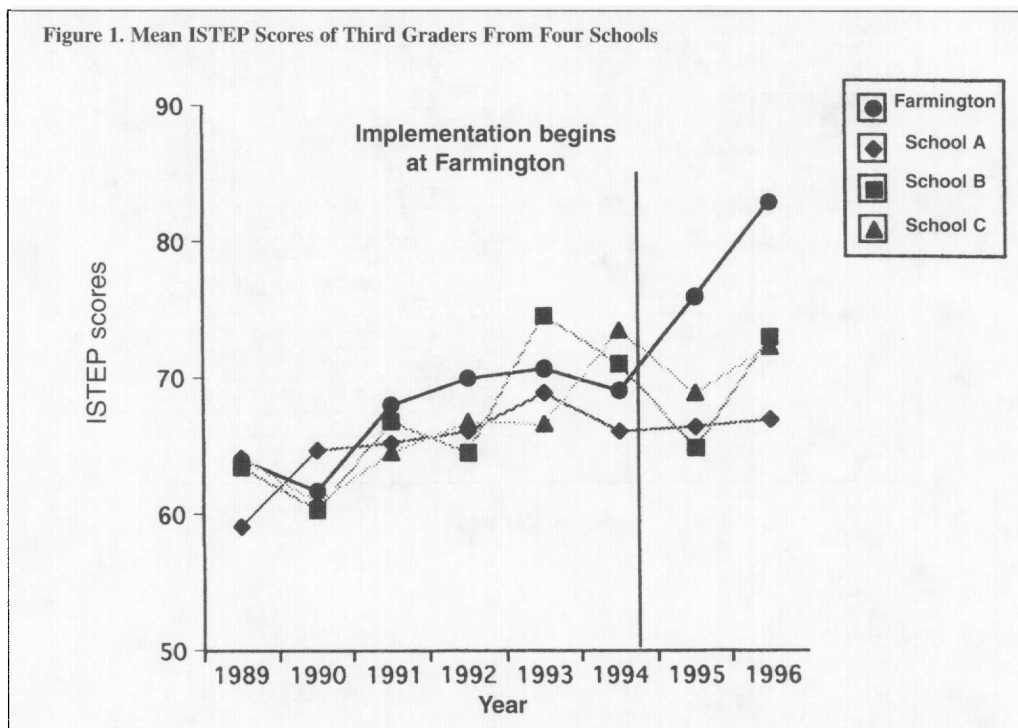
took longer to fully implement. Thus, in the present study, the impact of MI concepts and curriculum may have been underestimated.

A third limitation was the low parental participation in interviews and surveys. The low participation rate lowers confidence in the results concerning parental attitudes. However, the high level of agreement among surveys, group interviews, and validation interviews suggest that the parental results are valid. The pattern of responses and written comments on the surveys, as well as the comments during the interviews, made it clear that parents were willing to criticize aspects of the curriculum and school that they did not like but, in general, felt that they could trust the school personnel to do what was best for the children.

Finally, other changes were being made at Farmington concurrently with the implementation of the MI curriculum. Harper believes that the most important of those changes was the emphasis placed on the concept of the school as a community, with the classrooms as families, and that the MI curriculum promoted community concept by emphasizing mutual respect for all students. There were also some changes unrelated to the MI concept in a few individual classrooms, including the use of mathematics manipulatives and multiage classrooms. Those concurrent changes make it difficult to know which outcomes were caused solely by the MI curriculum.

**Conclusions**

In summary, the findings of this study suggest that teaching elementary school teachers and students about multiple intelligence theory can have a positive impact on students.



Students gained in self-confidence, and teachers learned to appreciate a wide variety of student strengths. Those effects should be evident in any school that implements an MI curriculum, even if that curriculum contains strategies very different from those adopted at Farmington Elementary.

In future research, investigators should focus on the impact of an MI curriculum on student learning. Although in this study a positive impact on standardized test scores was noted, one must also look at more authentic measures of student learning.

**NOTE**

Gwendolyn Mettetal is at the Division of Education; Cheryl Jordan is now at Penn-Harris Madison School Corporation. We would like to thank the teachers, students, and parents of Farmington Elementary School for their cooperation. We would also like to thank Marie Doyle for her helpful suggestions.

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