Middle School Practices Improve Student Achievement in High Poverty Schools

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The combined effects of teaming with common planning time, classroom practices, length of time teaming, and students' family income levels have an impact on student achievement.

Advocates of middle school education contend that young adolescents are more successful at schools that are developmentally appropriate, socially equitable, and academically excellent (National Forum to Accelerate Middle-Grades Reform, 2002). Critics of middle level education, on the other hand, often seek evidence of student success only in the form of student achievement data. The recent enactment of the *No Child Left Behind Act of 2001* clarified this accountability issue by stating that student academic success will be assessed through annual student achievement tests for grades three through eight (*No Child Left Behind Act of 2001, 2002*). Thus, student achievement scores will officially serve as the defining measure of success and failure for schools.

The challenge for middle grades educators, therefore, is to understand how curricular coordination and integration, as well as classroom instructional practices, are linked to student achievement. We must also understand that there are differences in academic achievement among students of various socio-economic backgrounds, genders, and so forth. Further, it often requires diverse teaching and learning strategies to positively affect the achievement of each subgroup of students in schools.

This study explores several factors that could potentially affect student achievement. The main question is, how do interdisciplinary team practices and classroom instructional practices affect student achievement in high poverty middle grades schools? We will examine several different factors that may contribute to successful implementation of practices. First, we will consider the impact of interdisciplinary teaming and common planning time taken by themselves. Second, we will address the effect of poverty using school-level free/reduced lunch status as the measure of students' family poverty level. Next we will examine what, if any, impact the duration of implementation of teaming has on practices and achievement. We will conclude that these factors, considered individually, are not sufficient to explain changes in instructional practices or student achievement. It is only when we examine the combined effects of all these factors (family poverty level, teaming and common planning time, and duration of teaming) that we find a relationship between teaming and classroom practices and student achievement. These findings will allow us to provide recommendations to teachers as to how to improve practices and student achievement by improving learning conditions in high poverty schools.

SCHOOLS IN THE STUDY

The data for this study were collected using the School Improvement Self-Study, a data collection system developed and conducted by the Center for Prevention Research and Development (CPRD) at the University of Illinois. The Self-Study consists of a set of surveys for teachers, administrators, students, and parents. The Self-Study measures progress in the various dimensions of school reform including curriculum, school climate, instruction, family involvement, student assessment, school-

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community partnerships, professional development, internal and external communications, school organization, and program evaluation.

Middle grades schools in the states of Arkansas, Louisiana, and Mississippi participated in the Self-Study as part of their involvement in the Mid South Middle Start Initiative, directed by the Foundation for the Mid South (FMS). Middle Start is a middle grades school reform initiative developed and implemented in Michigan over the past decade through funding by the W.K. Kellogg Foundation. FMS implemented Mid South Middle Start, also funded by the W.K. Kellogg Foundation, in 1997 in the Mid South region. Mid South Middle Start seeks to improve student achievement and related student outcomes in middle grades schools, particularly targeting schools that have significant numbers of disadvantaged students.

Teachers, students, and administrators in 121 schools serving middle grades students in the Mid South region completed the Self-Study during both the 1998-99 and the 2000-01 school years. In the latter academic year more than 3,500 teachers participated in the Self-Study teacher survey. This regional sample of middle grades schools is primarily located in rural communities with populations of fewer than 10,000 (57%), have a student population in which at least 40% receive a free or reduced-priced lunch (83%), and serve ethnically diverse communities.

PRACTICES EXAMINED

The two Self-Study dimensions that this study will examine are teacher reports of their levels of engagement in interdisciplinary team practices and classroom instructional practices. The interdisciplinary team and classroom practices measured by CPRD's Self-Study were identified by practitioners and researchers as effective strategies for promoting student success. The practices are defined quantitatively as scales or dimensions with each scale consisting of a series of teacher survey questions regarding how often specific team or classroom instructional activities occur (Figure 1).

The Self-Study contains four scales to assess levels of interdisciplinary team practices: (a) curriculum coordination and integration practices, (b) coordination of student assignments and assessments, (c) parent contact and involvement, and (d) contact with other building resource staff. Teachers rated their teaming practices on a scale from 1 to 7 (1=never, 2=once a year, 3=several times a year, 4=quarterly, 5=monthly, 6=weekly, 7=daily).

The seven classroom practices scales included in this study are (a) small group, active instruction; (b) integration and interdisciplinary practices; (c) authentic instruction and assessment; (d) critical thinking practices; (e) mathematical skill practices; (f) reading skill practices; and (g) writing skill practices. Teachers used a slightly different seven-point scale to rate their classroom practices (1=never, 2=several times a year, 3=monthly, 4=several times a month, 5=weekly, 6=several times a week, 7=daily).

Only the responses of core academic teachers (i.e., language arts, math, science, social studies) are examined. CPRD has observed that the level of team and classroom practices engaged in by core academic teachers are generally different from exploratory or elective subject teachers (e.g., art, music, physical education). Since the purpose of this study is to link practices with student achievement, the activities of core academic teachers are most pertinent.

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Figure 1
Description of Self-Study Team and Classroom Practices Scales

PRACTICES	DEFINITION	SAMPLE SELF-STUDY SURVEY ITEM
TEAM PRACTICES		
Curriculum coordination & integration	Team members work together to coordinate learning activities and integrate curriculum	Set goals and objectives relating to student learning
Coordination of student assignments, assessments, and feedback	Team members work together to coordinate work that is assigned to students, the way that it is graded, and the feedback that is provided	Monitor and coordinate student tests across subjects
Parent contact and involvement	Team activities encourage and promote the involvement of parents in their children's education	Plan and implement strategies to increase parent involvement
Contact with other building resource staff	Team activities promote contact with building administrators and other in-house resource personnel	Coordinate efforts with Special Education, Title I, Bilingual Education, Music, etc.
CLASSROOM PRACTICES		
Small group active instruction	Students work in small groups to complete learning activities that require their active involvement	Students engage in group problem solving, negotiation, and consensus development
Integration and interdisciplinary practices	Learning activities are coordinated across subject areas	Teachers from other subject areas help plan and carry out instructional units
Authentic instruction and assessment	Instructional activities use authentic assessment strategies	Exhibitions of student's work are used as part of instruction and assessment
Critical thinking practices	Learning activities that help students develop and improve critical thinking skills are incorporated into instruction and evaluation	Students revise their reports and papers
Reading skill practices	Instructional activities include chances for students to develop and use reading skills and concepts	Students read and discuss newspaper articles
Writing skill practices	Instructional activities include chances for students to develop and use writing skills and concepts	Students write and keep journals
Mathematical skill practices	Leaning activities include opportunities for students to enhance their abilities in mathematics	Mathematical concepts are taught using real world examples

SOURCES OF STUDENT ACHIEVEMENT DATA

The student achievement data were obtained from the state departments of education in Arkansas, Louisiana, and Mississippi. Each state administers a different achievement test (e.g., Stanford 9, Iowa Test of Basic Skills) in varying subjects and grade levels. However, in all three states students are tested in reading and mathematics in grade seven. Since the state achievement tests are different, the normal curve equivalency (NCE) score for each state will be utilized. NCE scores are very similar to percentile scores; the scale is 0-100, with higher scores being better than lower ones. The NCEs are nationally normed scores, and after an examination of the means and standard deviations within and across the states, we feel confident that the NCE scores from the three states can be combined

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for a regional analysis. Not all schools in the study sample included a 7th grade; the achievement scores reported are for 102 of the 121 schools.

THE INFLUENCE OF MIDDLE SCHOOL PRACTICES ON STUDENT ACHIEVEMENT

The purpose of this study is to establish a relationship between team and classroom practices, as assessed by the CPRD Self-Study, and student achievement. While there are numerous types of important student outcomes and multiple ways of assessing student learning and achievement, we fully recognize that student scores on standardized achievement tests are the outcomes preferred by district, state, and federal educational policy makers. Although standardized achievement tests serve a purpose, we would argue that student assessments should consist of multiple forms of assessment (Kohn, 2000). That being said, the analyses that follow examine the relationships between interdisciplinary team practices, classroom practices, and student achievement, as measured by standardized test scores.

Most middle grade educators and researchers agree that for schools to improve student outcomes, teachers must provide instruction that is engaging and developmentally appropriate for young adolescents (National Forum to Accelerate Middle-Grades Reform, 2002). Based on our experience, effective middle grades teams and classrooms are those that (a) maintain high levels of academic rigor, (b) have a curriculum that is meaningful, relevant, and connects subject matter, (c) provides opportunities for active learning, (d) goes beyond the boundaries of the team and classroom into the community, and (e) fosters a positive climate that stems from mutual respect and beneficial interactions.

Measuring and evaluating effective teams and classrooms can be a challenging and time-consuming task. First, teachers use a variety of techniques and activities to create effective teams and classrooms, and measuring all of them is difficult. Second, there are often disparities in the implementation of practices among teams and classrooms within the same school, thus blurring the overall school outcomes because of the varying frequency that the practices are occurring. Finally, each school sets its own program and implementation goals given its unique context (e.g., location, grade configuration, percentage of free/reduced lunch students) thereby creating a situation in which no two schools are alike in their priorities or implementation choices.

Relationship between team and classroom practices

An important goal of teaming that certainly contributes to improved teaching and learning outcomes is that teachers work together to coordinate and integrate the instruction that is delivered in the classroom. Given this goal, the activities that teams engage in as a group to plan and coordinate their work are likely to be related to the practices that those same teachers implement in their classrooms.

In analyzing the Self-Study data of the Mid South Middle Start schools, a positive association (i.e., correlation) between the practices occurring at the team level and those occurring in the classroom is clearly evident (see Figure 2). The strongest association is between the team practice of *curriculum coordination* and the classroom practice of *integration and interdisciplinary practices* (.86). This association indicates the magnitude of the relationship between these practices. As the frequency of one practice increases, the frequency of the other also increases. In other words, to successfully coordinate curriculum at the team level, the integration of subject matter and interdisciplinary

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approaches at the classroom level must occur frequently, and vice-versa. In fact, the team level practices of coordinating curriculum and coordinating student assignments and assessments correlate highly with all classroom practice dimensions measured by the Self-Study. Similar results were found in an analysis of team and classroom practices from the 1998-99 Michigan Middle Start Self-Study data (Flowers, Mertens, & Mulhall, 2000b). However, the 2000-01 Mid South correlations indicate stronger associations between the team and classroom practice variables. This is important evidence that links the work of teams to the teaching and learning process in the classroom.

Figure 2
School-Level Correlation Matrix of Classroom-Practices Dimensions and Team-Practices Dimensions

Classroom Practices	Team-practices dimensions			
	Curriculum coordination & integration	Curriculum of student assignments	Parent contact & involvement	Contact other building resource staff
Small group active instruction	.67*	.58*	.52*	.41*
Integration & interdisciplinary practices	.86*	.82*	.71*	.57*
Authentic instruction & assessment	.74*	.64*	54*	.41*
Critical thinking practices	.75*	.67*	.60*	.49*
Reading skill practices	.75*	.70*	.57*	.49*
Writing skill practices	.65*	.60*	.49*	.42*
Mathematical skill practices	.49*	.44*	.34*	.30*

* p<.01, two-tailed.

Teaming and common planning time

A critical element to successful middle schools is to create small, personalized learning communities by implementing interdisciplinary teaming. Interdisciplinary teaming is typically defined as a group of teachers from different subject areas who work together to coordinate and integrate curricula and instruction for a common group of students. Teaming creates a context that enables students and teachers to better know one another and allows teachers to better understand and support the learning of students. Teams generally focus on creating coordinated lesson plans; discussing student progress, problems, and issues; and integrating curricula and instruction (Epstein & MacIver, 1990; Erb, 2001; George & Alexander, 1993; Pate, 1997). The growing body of evidence supporting the positive impact of interdisciplinary teaming on middle grades schools and students is difficult to refute. Students and teachers in schools that have implemented teaming and its associated practices with some degree of integrity consistently report more positive and productive learning environments (Arhar, 1990, 1997; Dickinson & Erb, 1997; Lee & Smith, 1993; Steffes & Valentine, 1996). In addition, more large-scale and comprehensive studies have been conducted that successfully demonstrate the effects of teaming on student outcomes (Felner, Jackson, Kasak, Mulhall, Brand, & Flowers, 1997; Mertens, Flowers, & Mulhall, 1998; University of Illinois, 2001).

Research has also demonstrated that for interdisciplinary teams to be effective, teachers need regular common planning time (CPT) to work together as a group (Erb & Doda, 1989; Flowers, Mertens, & Mulhall, 1999, 2000a; George & Alexander, 1993; Howe & Bell, 1998; Warren & Muth, 1995). CPRD's prior research with Michigan Middle Start Schools has shown that when teachers in schools

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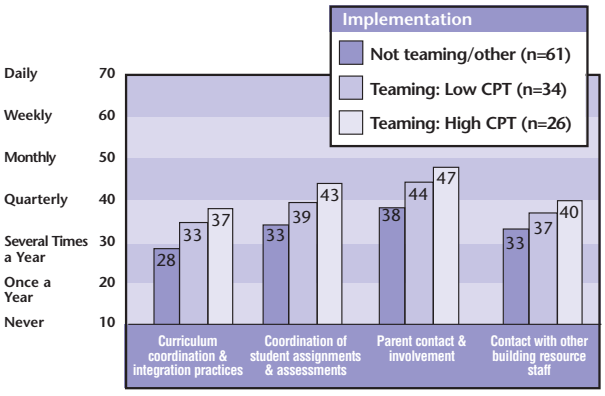
fully engaged in teaming are provided with high levels of common planning time, student self-reported outcomes improve including less depression, fewer behavior problems, higher self-esteem, and greater academic efficacy (Mertens et al., 1998). In addition, student achievement scores improve dramatically, particularly for those schools with high percentages (60% or more) of free and reduced price lunch students.

However, there were fewer high-poverty schools in the Michigan study as compared to the states in this analysis. The statewide free/reduced lunch percentage for Michigan middle grade schools is approximately 31 percent, compared to Arkansas with 50 percent, Louisiana with 62 percent, and Mississippi with 67 percent (National Center for Education Statistics, 2000-01).

Half of the 121 schools in this sample are teaming: 22% with "high levels" of common planning time and 28% with low common planning time. "High levels" of common planning time is defined as a minimum of four meetings per week, with each meeting lasting at least 30 minutes. "Low levels" of common planning time is defined as anything less than "high levels," either in frequency or duration. The remaining schools in the sample (50%) are categorized as other or not teaming (teaming in all middle grades, but with no common planning time; teaming in some, but not all, middle grades, irrespective of common planning time; and schools not teaming).

An examination of team and classroom practices by level of teaming/common planning time in this sample of Mid South regional schools provides additional evidence to support the benefits of teaming. The schools that are teaming with high levels of common planning time have the highest frequencies of team practices, followed by schools that are teaming with low common planning time (Figure 3). Lastly, schools in the other or not teaming category have significantly lower team practices. It is not surprising that the team activities among the other or not teaming schools are low. After all, they do not have consistent common planning time. The more highly implemented schools consistently engage in more frequent team related practices.

Figure 3
Team Practices by Implementation[1]



[1] *Mean scores significant at p<.01*

An analysis of classroom practices by level of teaming/common planning time is quite promising. As with team practices, schools with high common planning time are engaged most frequently in middle grades oriented classroom practices, followed by schools that are teaming with low common planning time. The differences in the frequency of classroom practices are not as great between the teaming/common planning time groups as we observed with team practices, but the pattern is consistent. Further, for two key classroom practices *(integration and interdisciplinary practices and reading skill practices)* the differences are statistically significant.

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As we have found in our prior research, it is common for schools, particularly those just beginning to implement the middle school concept, to observe more significant changes over time in team practices as compared to classroom practices (Flowers et al., 2000b). This, we believe, is to be expected. For teachers to increase the frequency of classroom practices such as small group active instruction, integration of interdisciplinary practices, and authentic instruction and assessment, they often need additional professional development and training. In considering that the vast majority of teachers currently teaching in middle grades classrooms across the country are either elementary or secondary certified (very few have a specific middle grades teaching certification) it is realistic to expect that most middle grades teachers require professional development focused on middle grades instruction, learning, and assessment to do their jobs with utmost skill.

A recent large-scale study of teacher certification has demonstrated that middle-grades certified teachers in schools with interdisciplinary teaming and high levels of common planning time reported higher levels of team and classroom practices compared to elementary or secondary certified teachers in the same schools (Mertens, Flowers, & Mulhall, 2002).

The impact of teaming/common planning time on team and classroom practices is positive. However the level of implementation as a single factor does not appear to affect student achievement in higher poverty schools. There are no significant differences in student achievement between schools that are teaming with high common planning time, low common planning time, or other/not teaming. In other words, the simple existence of teams and common planning time in a school does not guarantee a positive impact on student achievement, even though the team practices, and to a lesser degree the classroom practices, are more frequent in higher implemented schools. An implication of this finding is that teams need to sustain the use of effective classroom practices before we can expect to see a corresponding positive change in achievement.

Does the income level of students' families matter?

The impact of socio-economic status on middle grades education in this region cannot be understated. As we saw earlier, the Mid South Middle Start sample contains schools with very high percentages of students in free or reduced price lunch programs. Of the 121 schools:

- The vast majority (83%) have 40% or more students from low income families;
- Nearly half (48%) have 60% or more students from low income families; and
- More than a quarter (26%) have 80% or more students from low income families.

After examining the free and reduced price lunch data for the Mid South Middle Start sample, we placed schools in one of three categories: 0-39% free or reduced-price lunch (21 schools), 40-59% (42 schools), and 60-100% (58 schools).

In examining the levels of team practices by income level of students, we observed several interesting findings. First, across all income levels, most team practices are occurring infrequently (i.e., between several times a year and quarterly). The most frequent team practice is *parent contact and involvement*, occurring quarterly. Second, both schools with the lowest percent of low income students (0-39%) and schools with the highest percent (60% or more) have the highest levels of team practices. Finally, schools with 60% or more students from low income families also have the *highest* levels of *curriculum coordination and integration practices* as compared to schools serving more

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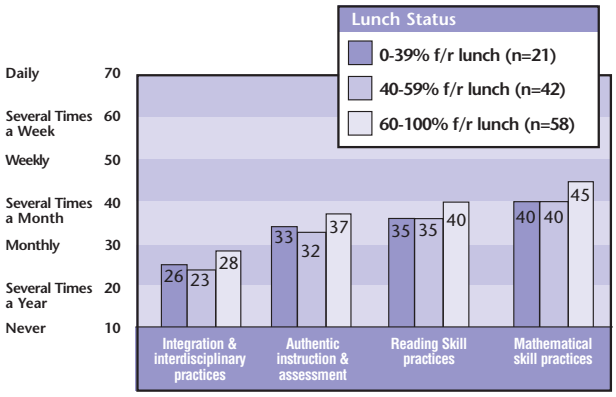
affluent populations. It is surprising to find that the Mid South Middle Start schools with very high percentages of low income students have levels of team practices comparable to or higher than schools serving much lower percentages of these students (0-39%). Clearly the teachers in these high poverty schools were engaging more frequently in middle grades teaching and learning practices.

The findings that emerge from examining the classroom practices by income level of students are very similar to what we found for the team practices. Overall, most of the middle grades oriented classroom practices are occurring with moderate frequency, between monthly and several times a month. The most important finding was that schools with 60% or more low income students had the highest levels of all classroom practices (Figure 4). The differences in classroom practices scores between the schools serving different income levels of students are statistically significant. This is an important finding and should not be underestimated. Based on our prior research it is unusual for schools serving 60-100% low income students to have such high levels of middle grades oriented practices and for the level of these practices to be higher than those in schools with many fewer low income students (0-39%).

Figure 4
Classroom Practices by Family Income (Lunch Status)[1]



[1] *Mean scores significant at p<.01*

In this sample, schools serving low income populations have the highest levels of middle level classroom practices. Practices alone, however, have not yet positively affected student achievement in these schools. Despite the increased level of both team and classroom practices for schools with 60-100% low income students, student achievement scores for these schools are still low. This is not surprising and, unfortunately, matches the national trend for schools with large populations of students from low income families.

Effect of poverty level and implementation of teams with common planning time

After examining the *separate* effects of teaming with common planning time and student income level on teaming practices, classroom practices, and student achievement, we will now examine the *combined* effect these two variables have on practices and achievement.

The results from this analysis present a familiar pattern. Regardless of student income level, the highest levels of both team and classroom practices are found for schools that are teaming with high amounts of common planning time. Within each income category, schools with the highest amounts of team common planning time have the highest levels of teaming and classroom practices, followed by low common planning time schools, followed further behind by other/not teaming schools. The student achievement data, regardless of teaming/common planning time category, show the highest scores for schools with the fewest low income students (0-39%).

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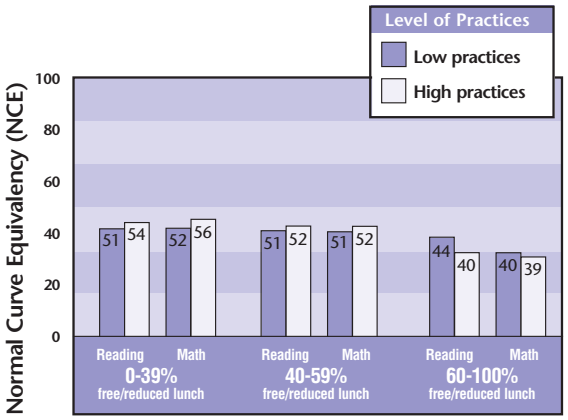
The implementation of teaming with high common planning time appears to have an impact on reading scores in schools with 60% or more of students from low income families. It is not coincidental that these schools reported higher levels of nearly all team and classroom practices. More affluent schools (i.e., less than 40% of students from low income families) still have higher overall levels of student achievement. However, schools with the highest percentage of students in poverty (60-100%) implementing teaming with high amounts of common planning time demonstrate slightly better reading achievement scores than do more affluent schools.

Impact of sustained implementation of common planning time

Before discussing the effect of sustaining teaming and common planning time over time, let us review what we have already learned. First, we found that schools with 60% or more students from low income families had the highest levels of classroom practices and very high levels of team practices. Second, we found that schools that are teaming with high common planning time consistently have the highest levels of team and classroom practices; however, there were no differences in student achievement by teaming/common planning time categories. Last, we looked at the combined effect of income status and teaming/common planning time on school practices and student outcomes. Here we found that teaming with common planning time has a positive effect on practices regardless of student income status and that teaming with common planning time had the greatest impact on student achievement in high poverty schools.

Does the length of time a school has been engaged in teaming have any impact on student achievement? In this analysis we selected only schools that are teaming with high or low common planning time and schools that did not have a "decrease" in their teaming/common planning time status between 1999 and 2001 (57 of the 121 schools in the total sample). In other words, only schools that have been teaming for at least three years with stable common planning time were selected. Schools that are not teaming or who have had a decrease in their level of teaming/common planning time were excluded from this analysis. In addition, since our previous analysis showed that teaming/common planning time alone did not appear to substantially impact student achievement in these high poverty schools, we divided the 57 schools into two groups, those with high levels of classroom practices and those with low levels. To determine which schools were high vs. low, we examined the midpoint in the distribution of the classroom practices. Schools with classroom practices scores above the midpoint were classified as "high" and schools with scores below as "low."

Figure 5
Achievement Scores by Family Income by Level of Classroom Practices



It is only after combining the effects of income level, level of teaming with common planning time, length of time teaming, and level of classroom practices that we discover the collective impact these variables have on student achievement in these schools. Schools that have been teaming for at least three years with no decrease in their level of common planning time and that have high levels of practices also have higher achievement scores compared to schools with lower levels of practices (Figure 5).

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Compared to schools with "low" levels of practices, schools in the 0-39% low income category with "high" levels of classroom practices have higher reading and math achievement scores. Schools in the 40-59% low income category with "high" levels of classroom practices have comparable reading and math achievement scores. And finally, schools in the 60-100% low income category with "high" levels of practices have slightly lower reading (44 vs. 40) and math (40 vs. 39) achievement scores. We believe that the impact of higher practices combined with teaming/common planning time is evident in these higher poverty schools; however, the vast majority of these schools have only been engaged in teaming for three years. Similar research in Michigan schools found that schools engaged in teaming for five or more years had higher achievement scores (Mertens et al., 1998). It is reasonable to conclude that the combined impact of more frequent teaming/common planning time and higher levels of practices will take more than three years to dramatically affect student achievement scores, particularly in schools with large populations of low income students.

HOW FACTORS INTERACT TO AFFECT ACHIEVEMENT

In reviewing the data analyses presented above, several key findings emerge. First, there is a very strong relationship between the levels of interdisciplinary team and classroom practices. We observed a positive relationship between these two types of practices linking the work of teams to teaching processes occurring in the classroom.

Second, we examined the impact of teaming combined with common planning time on both practices and student achievement. Clearly the levels of both team and classroom practices are affected by the level of teaming and common planning time. The analysis revealed a clear relationship in practices with high common planning time schools having the highest levels of practices. There were no differences, however, in student achievement scores when teaming and common planning time were studied in isolation from other factors.

Next we examined the effect that student family income status has on both practices and achievement. The Mid South Middle Start sample has a large number of schools with high percentages of low income students. CPRD's prior research in examining these effects has not included study samples with such high percentages of high poverty schools. In this analysis we found that schools with the highest levels of poverty (60-100%) had the highest levels of classroom practices and very high levels of team practices. This finding came as quite a surprise. On the other hand, achievement scores sorted by income status duplicated the national trend-schools with higher percentages of low income students had lower achievement scores. Obviously socio-economic status is one of the most important predictors of student outcomes.

The next step was to examine the effects of combining teaming/common planning time and student income level on practices and achievement. Here we found that regardless of student income level the highest levels of appropriate practices were observed in schools with high common planning time for teams. The highest achievement scores were found in low poverty (0-39%) schools. Interestingly, schools in the high poverty (60-100%) category that have high common planning time had the highest reading scores. While the level of teaming/common planning time has had some impact on these schools, it is still not enough to overcome the impact of low income status on student achievement.

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The final analysis considered whether schools that had maintained a stable level of teaming/common planning time saw an impact on student achievement. We selected only schools whose level of teaming/common planning time had remained constant or improved over a three-year period. In this analysis we examined the combined effects of all factors-teaming/common planning time level, income level of student families, continuity of teaming/common planning time, and levels of classroom practices. Here we see that classroom practices can be linked to positive results in student achievement for schools that have been teaming consistently with common planning time for a few years. Among these schools, those with higher levels of classroom practices had higher achievement than those with lower levels of classroom practices. While these results were true for the more affluent schools, it was not true for the high poverty schools. A possible explanation for this would be that the effects of teaming/common planning time in schools with these high percentages of low income students take longer to be observed in student achievement scores.

CONCLUSION

What lessons for classroom teachers, principals, or policymakers emerge from this explanation of the connection between team and classroom practices and student achievement? First, schools have very little control over the demographics of their student populations. As this study demonstrates, income levels of student families is still the predominant influence on student achievement. The majority of these schools have very high numbers of low income students that dramatically affects their student achievement scores. However, schools can ameliorate this situation through several combined factors. First, the implementation of interdisciplinary teaming and common planning time is critical to increasing levels of practices. Second, higher (i.e., more frequent) levels of team and classroom practices are associated with higher achievement. The final factor in this study influencing student achievement is experience. When teachers are engaged in teaming for several years, and have the necessary time to plan, they report higher levels of team and classroom practices. Therefore the sustained impact of teaming and higher classroom practices can produce higher student achievement. This is not a short-term process, particularly for high poverty schools. As observed in this study, schools with high percentages of low income students can and do develop high levels of team and classroom practices through sustained implementation of teaming and common planning time. Research such as this provides evidence that middle grades programs and practices can positively affect student achievement as measured by standardized test scores.

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