

How Teaming Influences Classroom Practices

Successful middle grades classrooms come in many different shapes and sizes. Some are colorful and stress creativity. Others are open and welcoming. All are active laboratories for the goals and programs of the school. Although schools operate on multiple levels — school-wide, grade level, interdisciplinary team, and classroom — it is the implementation of programs and practices at the classroom level that is most critical for improving student success.

The classroom is where curriculum and instructional practices intersect with individual teachers and students. It is the place where goals are implemented and their impact is immediately observed in the teaching-learning process. Schools must establish good communication and collaboration among the people at each level of decision making to effectively implement classroom instructional activities. It is imperative, therefore, that teachers are included in the decision-making process regarding the implementation of curriculum and learning practices in their classrooms. At the same time, classroom teachers should understand that they cannot

Research on Middle School Renewal

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Several teaming practices can improve classroom teaching. Sustained, improved classroom practice also improves student achievement.

operate their classroom independently of the goals of the school.

This article will summarize research findings related to measuring effective classroom practices, the aspects of interdisciplinary teaming that affect practices at the classroom level, and how classroom practices relate to student achievement. The longitudinal data described below were collected from a group of 70 middle grades schools in Michigan that are part of the Middle Start Initiative funded by the W. K. Kellogg Foundation. The 70 Middle Start schools participated in the Center for Prevention Research and Development's (CPRD) School Improvement Self-Study in 1994-95, 1996-97, and 1998-99. These data were collected from nearly 2,000 teachers and 23,000 students.

Measuring Effective Classrooms

Most middle grades educators and researchers agree that in order for schools to improve student outcomes, teachers must provide instruction that is engaging and developmentally appropriate for young adolescents.

Figure 1 Description of Self-Study Classroom Practices

Self-Study Classroom Practices		
Classroom Practice	Definition	Sample Self-Study Survey Item
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 students' work are used as part of instruction and assessment
Critical thinking enhancement practices	Learning activities that help students develop and improve critical thinking skills are incorporated into instruction and evaluation	Students revise their reports and papers
Mastery-based assessment and student recognition	Student learning is measured against performance standards rather than the performance of other students, and student successes are shared with the rest of the school	Students are given multiple opportunities to improve their grades
Reading skill enhancement practices	Instructional activities include chances for students to develop and use reading skills and concepts	Students read and discuss newspaper articles
Writing skill enhancement practices	Instructional activities include chances for students to develop and use writing skills and concepts	Students write and keep journals
Mathematical skill enhancement practices	Learning activities include opportunities for students to enhance their abilities in mathematics	Mathematical concepts are taught using real-world examples

Based on CPRD's experience, an effective middle grades classroom is one that

- maintains high levels of academic rigor
- has a curriculum that is meaningful, relevant, and connects subject matter
- provides opportunities for active learning
- goes beyond the boundaries of the classroom into the community

- fosters a positive climate that stems from mutual respect and beneficial interactions.

Measuring and evaluating effective classrooms can be a challenging and time-consuming task. First, teachers use a variety of techniques and activities to create an effective classroom, and measuring all of them is difficult. Second, there are often disparities in the implementation of practices among classrooms within the same school, thus blurring the overall school outcomes because of the varying frequency with which the practices are occurring. Finally, each school sets its own program and imple-

Figure 2 School-level¹ Correlation Matrix of Classroom-Practices Dimensions and Team-Practices Dimensions

Classroom-practices dimension	Team-practices dimensions			
	Curriculum Coordination	Coordination of student assignments	Parent contact & involvement	Contact with other building resource staff
Small-group active instruction	.48**	.34**	.32**	.13
Integration & interdisciplinary practices	.83**	.70**	.57**	.42**
Mastery-based assessment & student recognition	.42**	.52**	.46**	.36**
Critical thinking enhancement practices	.41**	.34**	.28*	.11
Authentic instruction & assessment	.51**	.40**	.26*	.22
Reading skill enhancement practices	.50**	.41**	.33**	.24
Writing skill enhancement practices	.43**	.28*	.12	.11
Mathematical reasoning and skill enhancement practices	.35**	.26*	.26*	.16

¹ Includes 68 of the 70 schools. Two schools excluded because core academic teachers could not be identified.

* Correlation is significant at the 0.05 level (2-tailed).

** Correlation is significant at $p < 0.01$ (2-tailed).

mentation goals given its unique context (e.g., location, grade configuration, percentage of free/reduced lunch students), thereby creating a situation where no two schools are alike in their priorities or implementation choices.

The classroom practices measured by CPRD's Self-Study were identified by practitioners and researchers as effective strategies for impacting student success. Each practice described in Figure 1 is based on a series of questions on the teacher survey regarding how often specific classroom instructional activities occur. Only the responses of core academic teachers (e.g., language arts, math, science, social studies) are considered, and the data are reviewed with the *school* serving as the unit of analysis. This article addresses key classroom practices among core academic teachers in 70 Michigan middle grades schools. The practices presented relate to the frequency of integration of subjects, authentic instruction, student recognition, critical thinking skills, and subject-specific enhancement practices.

Overall, the Michigan middle-grades schools displayed minimal changes in the frequency that they engaged in classroom practices from 1995 to 1999. Teachers report that the most frequently occurring

practices are citizenship and social competence instruction, mastery-based assessment and student recognition, and mathematical skill enhancement practices (each occurring an average of "several times a month"). Integration and interdisciplinary practices, a classroom practice we consider to be essential to middle grades instruction, occurs "less than monthly" among these Michigan middle-grades schools. In addition, the frequency of a few practices decreased from 1997 to 1999. Since these schools have varying school improvement goals and diverse community contexts, we cannot be surprised to note limited improvement when analyzing the 70 schools without considering other mitigating factors (e.g., the presence of interdisciplinary teaming). This finding serves to illustrate the necessity of reviewing data of this kind within contextual parameters.

The Relationship Between Team and Classroom Practices

The likelihood that practices implemented in the classroom will have a sustained, positive effect on student outcomes is often directly related to the

larger context of the classroom. One of the contextual elements that has been widely endorsed by middle grades educators is interdisciplinary teaming. Research conducted by CPRD and others has demonstrated the critical impact that interdisciplinary teams have on improving outcomes at many diverse levels (Arhar, 1990; Dickinson & Erb, 1997; Felner, Jackson, Kasak, Mulhall, Brand, & Flowers, 1997; Flowers, Mertens, & Mulhall, 1999; Lewis, 2000). Michigan Middle Start schools engaged in teaming exhibited improved work climate, more frequent contact with parents, increased teacher job satisfaction, and higher levels of student achievement (Felner, Mertens, & Lipsitz, 1996; Mertens, Flowers, & Mulhall, 1998).

The strongest association is between team-level curriculum coordination activities and classroom-level integration and interdisciplinary practices.

An important goal of teaming that certainly contributes to the improved outcomes noted above is that teachers work together to coordinate 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 is likely to be related to the practices that those same teachers implement in their classrooms.

In analyzing the Self-Study data of the Michigan Middle Start schools, a positive association (i.e., correlation) between the practices occurring at the team level and those occurring in the classroom is evident (see Figure 2). The strongest association is between team-level curriculum coordination activities and classroom-level integration and interdisciplinary practices ($r^2 = 0.83$). 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, in order to successfully coordinate curriculum at the team level, the integration of subject matter and interdisciplinary 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 correlates highly with nearly all classroom practice

dimensions measured by the Self-Study. Similar results were found in an analysis of team and classroom practices from the 1996-97 Middle Start Self-Study data (Mertens, et al, 1998). The 1998-99 results, however, indicate stronger associations between the team and classroom practices variables. This is important evidence that links the work of teams to the teaching and learning process in the classroom.

Upon further examination of the relationships between classroom and team practices, an interesting finding emerges among schools that are teaming with high levels of common planning time (i.e., four or more meetings per week with each meeting lasting at least 30 minutes). The positive relationships between team and classroom practices are generally higher, indicating an even stronger affiliation between practices for schools that have high levels of common planning time. Clearly, common planning time enables teams to introduce, develop, and refine team and classroom practices at a deeper level.

The Impact of Team Structures on Classroom Practices

The structure of interdisciplinary teams has a significant impact on the types of practices that team members engage in (e.g., curriculum coordination, coordination of student assignments and assessments). The three most critical aspects of a team that affect its ability to be successful are (a) the amount of common planning time, (b) the number of students assigned to the team, and (c) the number of years that the team has been working together. Research has shown that teams with adequate levels of common planning time, smaller student team sizes, and teams that have had an opportunity to work together for a longer period of time are most likely to engage in team-level activities that are associated with improved student achievement (Felner et. al., 1997; Flowers, Mertens, & Mulhall, 2000; Warren & Muth, 1995). Since team and classroom practices are positively related to each other, it bears investigation as to whether these same team structures impact the implementation of classroom practices in the same manner.

Common planning time

Among Michigan Middle Start schools, the classroom practice of integration and interdisciplinary

work is most affected by the team's level of common planning time. Schools that are teaming with high levels of common planning time are integrating instruction in the classroom more frequently as compared to schools that are either teaming with low levels or no common planning time, or that are not engaged in teaming. For many of the other classroom practices (mathematical skill enhancement, reading skill enhancement, mastery-based assessment and student recognition), teaming schools, regardless of whether they have high or low levels of common planning time, are implementing more frequently than non-teaming schools or schools with no common planning time at all. This finding suggests that the impact of common planning time on classroom practices may be dependent on whether the implementation of the practice at the classroom level necessitates a coordinated effort at the team level. For those classroom practices that do require team coordination, they are more likely to be influenced positively if the school has high levels of common planning time. Other practices may not require this same level of sustained support at the team level.

Team size

CPRD's prior research identified teams with 90 or fewer students as being an optimal size for engaging in team-level activities related to the curriculum as well as student assignments and assessments (Flowers, et. al., 2000). An analysis of classroom practices among the 70 middle grades schools in Michigan corroborates this finding. Teachers with interdisciplinary teams of 90 or fewer students (n=245 teachers) have the highest frequency of classroom practices, especially for integration and interdisciplinary practices, mathematical skill enhancement practices, reading skill enhancement practices, and writing skill enhancement practices (see Figure 3). Often the classroom practices of teams with 121 or more students (n=265 teachers) was equal to that of teams of 91 to 120 students (n=242 teachers). Clearly smaller teams are better able to manage not only the team coordination that is necessary for best practices, but also the classroom practices that serve to implement the programs.

Length of time teaming

Another structural factor of interdisciplinary teams that affects student outcomes is how long the school

has been engaged in interdisciplinary teaming. Classroom practices, similar to team practices, are affected by how long a team has been working together (see Figure 4). Schools that have been teaming for at least four years (n=44 schools) have significantly more frequent implementation of classroom practices than teams that have been collaborating for three years or less (n=19 schools). Unlike *team practices* where differences in the frequency of implementation can be seen as early as one or two years after the team began working together, improvements in *classroom practices* are often not observed for three to four years. This suggests several important observations:

- Improvements in team practices occur relatively quickly after schools implement teaming, and increase as schools continue to work together, especially for schools with high levels of common planning time
- The implementation of *classroom practices* improves among teaming schools; however, it appears to take longer to implement and be contingent upon the level and effectiveness of *team practices*.

Clearly smaller teams are better able to manage the classroom practices that serve to implement the programs.

Classroom Practices and Student Achievement

CPRD's prior research on Michigan Middle Start schools has already established a relationship between team structures, the frequency of team practices, and student achievement (Felner et al., 1996; Flowers et al., 1999, 2000). In addition, in schools engaged in teaming with high levels of common planning time, teacher reports of team practices are more frequent, and student achievement gains are higher.

The ultimate goal of the curriculum and instruction implemented in the classroom is to improve the teaching and learning process, which in turn, improves student success. Although many of the classroom practices implemented by the 70 middle

Figure 3 Impact of Student Team Size on Classroom Practices

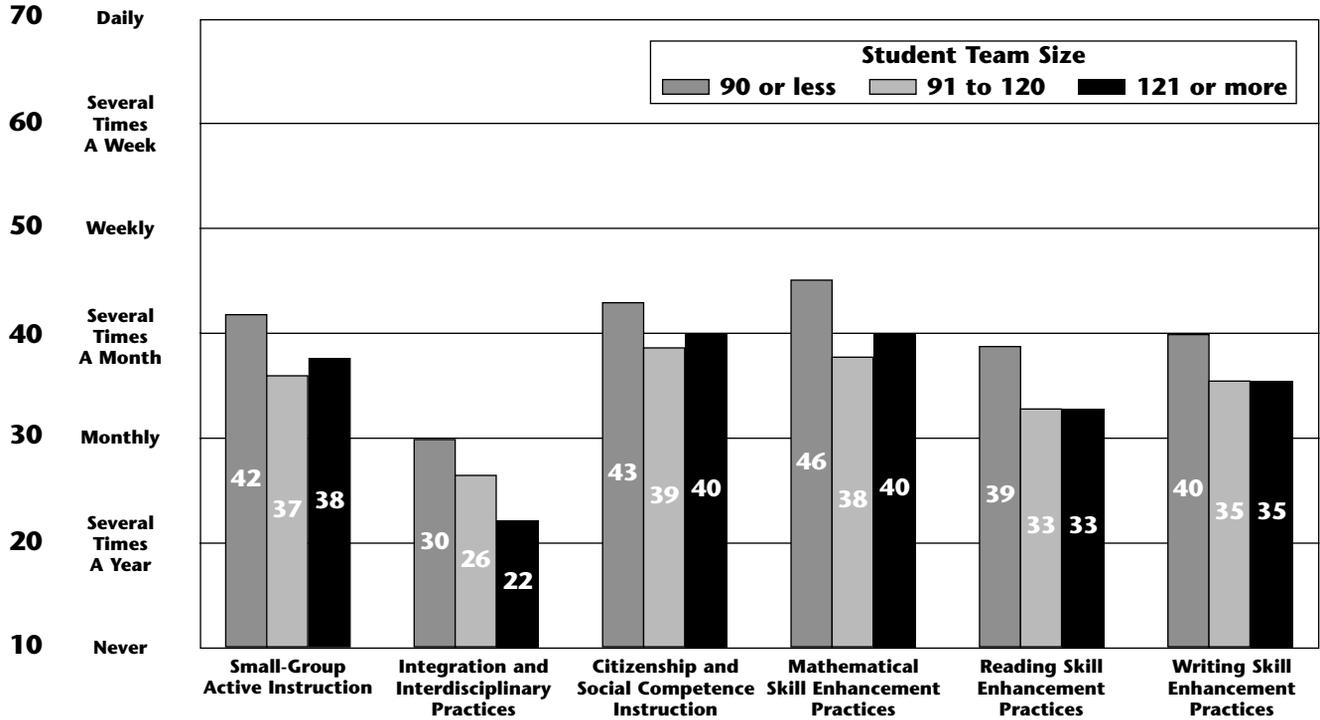
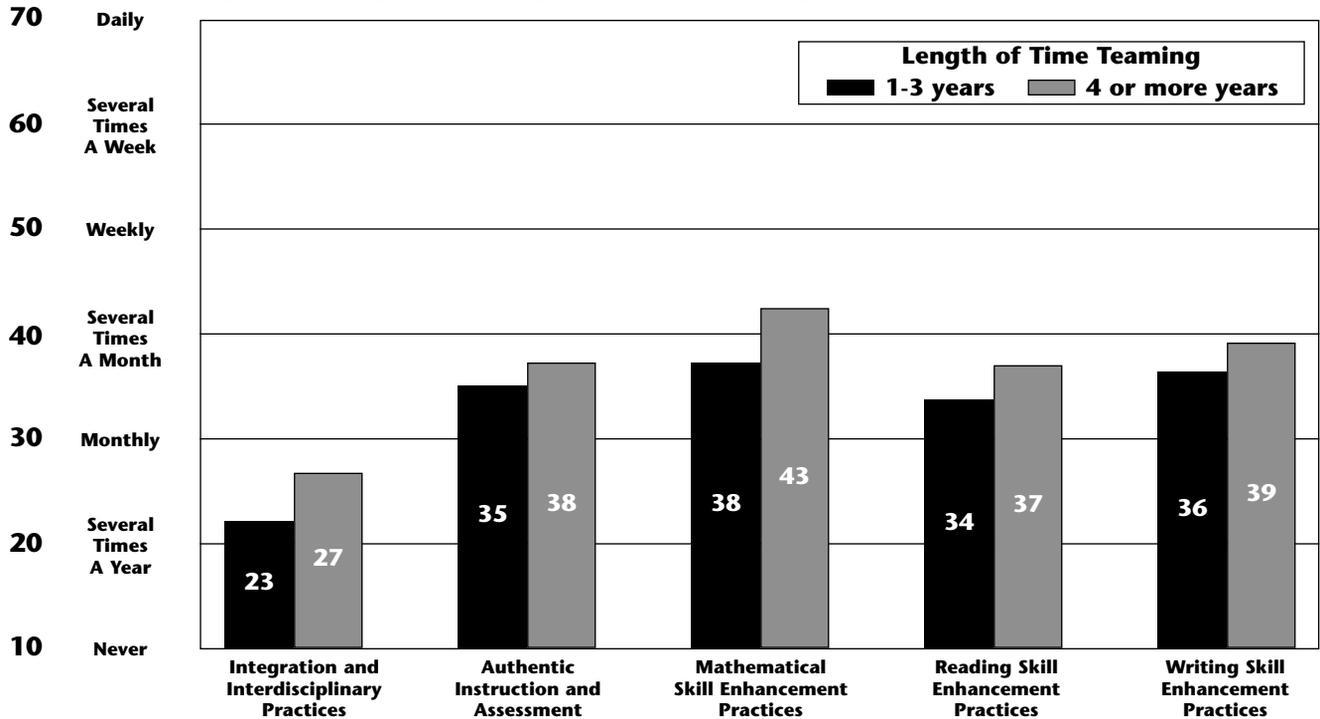


Figure 4 Impact of Length of Time Teaming on Classroom Practices



grades schools in Michigan are not yet occurring as frequently as desired, an analysis of Michigan achievement data indicates that student achievement scores are affected by the frequency of certain classroom practices.

The achievement data used for this analysis is the Michigan Educational Assessment Program (MEAP) for reading and mathematics administered every year to seventh grade students in Michigan schools (Michigan Department of Education, 1999). Using the Michigan Department of Education's MEAP data CPRD calculated student progress (i.e., gain scores) in achievement from 1995 to 1999 for each of the 70 Middle Start schools. The vast majority of Middle Start schools demonstrated gains, in some cases significant gains, in their student achievement reading and math scores from 1995 to 1999. This mirrors the performance on the MEAP observed for all Michigan middle grades schools.

Correlations between student achievement gain scores and classroom practices yielded positive relationships in all cases. Some classroom practices appear to have a stronger affiliation with student achievement gains than others. For example, in the case of reading achievement gains, the classroom practices of critical thinking enhancement ($r^2 = 0.32$), reading skill enhancement ($r^2 = 0.26$), and mathematical skill enhancement ($r^2 = 0.26$) have statistically significant correlations. In other words, as the frequency of these three practices increases, the reading achievement gains increase. This is a very important finding because it illustrates the linear relationship between classroom activities and student success. It allows educators to see that as they increase the level of implementation of middle grades practices, they can improve student outcomes. Some practices appear to have a stronger affiliation with student achievement gains than others.

A preliminary multi-variate analysis of team and classroom practices, combined with levels of teaming and common planning time, has yielded very promising results. Of particular note is the effect of lunch status on achievement gain scores. Students in schools with less than 40% free and reduced lunch students appear to make gains in reading more quickly than students in schools with 40% or more free and reduced lunch students. Schools with higher percentages of at-risk students take longer (i.e., 3-5 years) to obtain comparable achievement results. We remain encouraged by the positive relationships that

have emerged from the analysis discussed above. We hope that further investigation will serve to strengthen these findings.

Team size, amount of common planning time, and length of time together as a team influence classroom instruction.

Summary

As educational researchers, we are encouraged by the findings illustrated in this article because they further highlight the steps in the path toward understanding what factors positively influence student success. One step that has been highlighted by these findings is that the coordinated efforts of interdisciplinary teams and the implementation of practices in the classroom are linked, suggesting that one influences the other. Another point of clarity is that interdisciplinary teaming structures — including team size, amount of common planning time, and length of time together as a team — affect not only *team-level* practices, but they also influence *classroom* instruction. Thus, the teams that are most likely to implement more practices in the classroom are small teams (90 students or fewer), teams with frequent common planning time, and teams that have been working together for at least four years. Finally, it is now evident that classroom instructional practices are positively related to student achievement gains. Although we cannot assert the strength of the link between classroom practices and student achievement at this time, the existence of a positive relationship is promising because it provides educators with evidence supporting their work.

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References

- Arhar, J. (1990). Interdisciplinary teaming as a school intervention to increase the social bonding of middle level students. *Research in Middle Level Education: Selected Studies 1990*. Columbus, OH: National Middle School Association.
- Dickinson, T. S., & Erb, T. O. (1997). *We gain more than we give: Teaming in middle schools*. Columbus, OH: National Middle School Association.
- Felner, R. D., Jackson, A. W., Kasak, D., Mulhall, P., Brand, S., & Flowers, N. (1997). The impact of school reform for the middle years: Longitudinal study of a network engaged in *Turning Points*-based comprehensive school transformation. *Phi Delta Kappan*, 78(7), 528-532, 541-550.
- Felner, R., Mertens, S., & Lipsitz, J. (1996). *Assessment of Middle Grades Education in Michigan: A Report to the W. K. Kellogg Foundation's Middle Start Initiative*. Urbana, IL: University of Illinois.
- Flowers, N., Mertens, S., & Mulhall, P. (1999). The impact of teaming: Five research-based outcomes of teaming. *Middle School Journal*, 31(2), 57-60.
- Flowers, N., Mertens, S., & Mulhall, P. (2000). What makes interdisciplinary teams effective? *Middle School Journal*, 31(4), 53-56.
- Lewis, A. C. (2000). A tale of two reform strategies. *Phi Delta Kappan*, 81(10), K6-K18.
- Mertens, S., Flowers, N., & Mulhall, P. (1998). *The Middle Start Initiative, Phase I: A longitudinal analysis of Michigan middle-level schools*. Urbana, IL: University of Illinois.
- Michigan Department of Education. (1999). *Michigan Education Assessment Program (MEAP) Handbook: 1998-1999 Results*. Lansing, MI: Author.
- Warren, L. L., & Muth, K. D. (1995). The impact of common planning time on middle grade students and teachers. *Research in Middle Level Education Quarterly*, 18(3), 41-58.

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