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Middle School Classrooms: Teachers' Reported Practices and Student Perceptions

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ABSTRACT

Middle school teachers' reported classroom practices, middle school students' perceptions of classroom practice, and the alignment of reported practices and perceptions with the middle school movement's orientation towards student achievement form the foci of this study. As part of a larger study looking at two different interventions for addressing the academic diversity of middle school learners (Callahan, Tomlinson, Moon, Brighton, & Hertberg, in preparation), teachers in participating schools were asked to complete a middle school practices survey. Students completed a parallel survey on their perceptions of their classrooms. In addition to reporting teacher and student responses to the surveys, comparisons between teacher reported practices and student perceptions as well as comparisons with the 1995 national study of middle school teacher practices (Moon, Tomlinson, & Callahan, 1995) are provided in this monograph. Examination of teacher practices and student perceptions in addressing academic diversity in middle school classrooms evolved from examining the literature on: (a) characteristics of middle school students, (b) student achievement goals in the middle school, (c) middle school curriculum, instruction and assessment practices, (d) accommodating academic diversity in the middle school classroom, and (e) student grouping.

Findings replicate what was previously found in the 1995 NRC/GT study as well as provide unique findings relative to the particular interventions implemented as part of the larger NRC/GT study. Consistent with the 1995 study findings, teachers report that learning contracts, tiered assignments, advanced organizers, computer programs focusing on basic skills or advanced understanding, curriculum compacting, learning centers, flexible grouping, or interest centers are rarely used in their middle school classrooms. In contrast to the 1995 study findings, state curriculum standards, local curriculum guides, and key concepts and principles of core disciplines are considered the three most important factors in determining instructional content taught by teachers.

Findings unique to the study indicate the majority of teachers report using example activities and observations to modify the content of activities, types of products required of students, and student grouping arrangements; yet a large portion of teachers also indicate never tailoring an assignment for students or varying materials based on student readiness levels. Instead, lecture, direct instruction to the whole class using the state standards and local curriculum guides, is the predominant reported modality of teaching.

Students indicated, consistent with teachers' responses, that the instructional content of their classes was textbook driven and focused on student success for more formal assessments (e.g., end-of-unit tests, standardized tests). Students also indicated whole group instruction supported by note taking and all students working on the same assignment as the predominant format of their classrooms.

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EXECUTIVE SUMMARY

Review of the Literature

One of the most pivotal concerns voiced in the literature on the middle school is the lack of academic rigor (Beane, 1999; Gallagher, Harradine, & Coleman, 1997; Tucker, & Codding, 1998; Williamson, Johnston, & Kanthak, 1995). Tucker and Codding (1998) recently called middle schools "the wasteland of our primary and secondary landscape" (p. 153). Specific criticisms concerning the lack of academic progress of middle school students include:

- a lack of curricular focus on core academic courses and analytical skills leading students to focus away from school and even become alienated from it;
- a lack of preparation for either high school or meaningful employment;
- a dramatic increase in inflexible ability grouping as children enter middle school, restricting at-risk students' access to challenging curricula and contributing to subsequent low achievement (Ames, 1998; Argetsinger, 1999; Carnegie Council on Adolescent Development, 1989; McEwin, Dickinson, & Jenkins, 1996).

Some critics have suggested that overemphasizing social, psychological, physical, and emotional needs of middle school students has contributed to schools that do not academically challenge students. In apparent response to these criticisms, the most significant change in the 2000 edition of *Turning Points* is the designation of student success and achievement as the primary goal, and as a more important goal than any other recommendation made. Jackson and Davis (2000) explicitly stated, "Let us be clear. The main purpose of middle grades education is to promote young adolescents' intellectual development" (p. 10). All other recommendations in *Turning Points 2000*, including those related to social and emotional development, are designed to lead to the goal of student intellectual development.

Student Achievement Goals

Middle school programs are faced with criticism due to the perception that they have improved students' sense of emotional well-being but have yet to emphasize academic understanding and challenge (Beane, 1999; Clark & Clark, 2000; Lipsitz, Jackson, & Austin, 1997; Lipsitz, Mizell, Jackson, & Austin, 1997; Midgley & Edelin, 1998; Williamson et al., 1995). These criticisms have become more prevalent due to the recent movement towards accountability and high-stakes testing, as well as recent international reports of student achievement (Callahan, Tomlinson, Reis, & Kaplan, 2000).

It becomes critical that the middle school movement finds ways where the principles of affective development and the need for achievement results can co-exist (Midgley & Edelin, 1998). However, in negotiating this balance it is important that middle schools do not abandon the gains made in creating healthy social and emotional environments. Schools with high levels of academic rigor and high levels of social support have been found to achieve greater reading and math gains than schools that are focused only on one or the other dimension (Lee, Smith, Perry, & Smylie, 1999).

Middle School Curriculum, Instruction, and Assessment

Quality curriculum in the middle school articulates a clear set of goals for learning that reflect both deep, conceptual understanding of the subject area and mastery of skills needed for increasingly expert performance (Goldsmith & Kantrov, 2000). A rigorous curriculum offers students a coherent view of the subject area by providing connections that help students see and appreciate the recurring themes, ideas, and methodologies of the discipline instead of only isolated pieces (Goldsmith & Kantrov, 2000). It provides opportunities for connections between classroom study and real-world applications, helping students to recognize the practical utility of their developing knowledge (Goldsmith & Kantrov, 2000). A rigorous curriculum requires products that are useful and applicable to the real world that arise from a variety of assessment techniques including performance tasks, projects, and portfolios (Beane, 1999; Brandt, 1998; Erickson, 1998; Jackson & Davis, 2000; Maker & Neilson, 1995; Manning, 2000; National Middle School Association, 1995; Stix, 2000; Tomlinson, 2001; Wiggins & McTighe, 1998).

Research suggests that classroom practices are characterized by one general curriculum with teachers relying on traditional teacher-directed, whole class instruction (George, 2001; Moon, Tomlinson, & Callahan, 1995). Presentation, question-and-answer opportunities, practice drills and re-teaching compose the most common instructional sequence in middle school classrooms (George, 2001; Moon et al., 1995). Studies of schools across the nation find very little differentiation of instruction or flexible grouping taking place, despite the predominant use of heterogeneous classes (Moon, et al., 1995; Plucker & McIntire, 1996; Westberg, Archambault, Dobyns, & Salvin, 1993). These findings are in direct contrast with school organizational structures (e.g., interdisciplinary teams) that have been deliberately implemented in the middle school to support

collaboration among school faculty, for focusing on individual students' differences, and for the sharing and pooling of expertise (Moon et al., 1995).

Academic Diversity in the Middle School

Despite recommendations from national organizations and scholars that teachers work to accommodate student academic diversity within their classrooms through curriculum and instructional modifications (Jackson, & Davis, 2000; Manning, 2000; National Middle School Association, 1995), they do not appear to be using strategies that could benefit diverse learners on a regular basis in the classroom (Moon et al., 1995). This disregard of academic diversity affects students on both ends of the ability spectrum. While students with learning difficulties and other differently-abled students require modifications of curriculum and instruction to achieve success, advanced learners also require curricular modifications to reach their potential. Middle schools have been justifiably criticized for not providing services for the gifted (Tomlinson, 1994).

In a study of high achieving middle schools, Peterson (2001) found frequent use of tracking, with all schools tracking in math and many in language arts. George (2001), in a recent study of Florida middle schools, found that the vast majority of middle schools provided advanced classes in at least math and language arts, if not also social studies and science, for gifted and high-ability students. The use of special classes is also supported by findings that middle school teachers and principals continue to believe that special classes are appropriate for remedial, special education, and advanced learners (Moon et al., 1995). However, the use of tracked classes is counter to one of the key principles of the middle school movement, heterogeneously grouped classes.

Student Grouping in Middle Schools

Heterogeneous grouping of students is one of the hallmarks of the middle school movement as a consequence of the rejection of tracking students by ability (Jackson & Davis, 2000; National Middle School Association, 1995). Advocates for eliminating tracking are concerned about the effect of lowered expectations on homogenously grouped struggling students and the disruption caused by grouping gifted students together for portions of the day (Sapon-Shevin, 1996), despite evidence that gifted students benefit from being grouped together (Kulik & Kulik, 1997; Lando & Schneider, 1997; Rogers, 1998).

Although structural changes have occurred within middle schools, such as the use of heterogeneous home groups within the school, it seems that little has changed in the ways students are taught. Changes in structure without changes in curricula have been implicated as part of the reasons that middle schools have not accomplished their achievement goals (Beane, 2001; Dickenson, 2001; Midgley & Edelin, 1998).

Key Questions Related to Academic Diversity in the Middle School

As indicated earlier, this study is part of a larger study on addressing academic diversity as well as an update to a national study reported in 1995 on educators' beliefs and practices in addressing academic diversity in the middle school by The National Research Center on the Gifted and Talented (NRC/GT) at the University of Virginia. Key questions for the current study include:

Teacher Questions

- To what degree do middle school classrooms appear to engage in developmentally appropriate structures and practices likely to address the wide range of academic readiness, interests, and learning profiles inevitable in middle level populations?
- What is the nature of the curriculum and instruction at the middle level and to what degree does it seem appropriately responsive to academic diversity?
- How do middle school teachers enact the concept of differentiating or modifying curriculum and instruction based on learner readiness, interest, and learning profile?

Student Questions

- Are students' response patterns of their perceptions about their classrooms consistent with what is reported by teachers?

Study Design

Sample

States

Middle schools (grades 6-8) were invited to participate from the Collaborative School District Database of the NRC/GT based on the state testing programs in place at the time the study was planned. Schools that participated in the study represented three states with two states located on the East Coast and one in the Southwest. Information reported by each state's chief school officer (state superintendent) in the annual Council of Chief State School Officers (CCSSO) state assessment program survey (CCSSO, 2000) was used to create the overviews of these states' testing programs which follow. While the original intent of the study was to classify each state according to the type of accountability tied to student outcomes, it became apparent early on in the study that regardless of the type of accountability reported by the CCSSO, teachers in all states considered the assessment programs in their states to be high-stakes. Therefore, we could not clearly control for differences in the testing environments across the three states.

Schools

Nine middle schools participated in the project representing four school districts in the three states described above. Schools were located in two small urban school districts, a large suburban school district, and a large urban school district.

Each school was designated as a treatment site: differentiation and assessment, differentiated authentic assessment only, or comparison. Within each school, one interdisciplinary team of teachers at each grade level participated. Students who were assigned to the participating team served as the student sample. State One contained three schools, each representing a treatment (differentiation, assessment, and comparison); State Two contained four schools representing each treatment, with the assessment treatment having two schools; and State Three contained two schools, with only the differentiation and comparison treatments represented.

Instrumentation

Middle School Teacher Questionnaire

The middle school teacher questionnaire used in this study was a modification of a survey used previously in a nationwide sample of middle school teachers (Moon, et al., 1995). The questionnaire contained 13 pages of questions that solicited information on (a) the background of the teacher, (b) the teacher's beliefs about classroom issues, and (c) the teacher's curriculum, instructional, and assessment practices.

Middle School Student Content Questionnaires

These questionnaires were developed to assess students' perceptions in each of their classrooms in each subject areas (Language Arts, Math, Science, and Social Studies). All questionnaires contained the same items with the only difference being the specific content area being inquired about. Several questions on these questionnaires mimicked questions on the teacher questionnaire. This was done to obtain the students' perceptions on the same issues that we had presented to the teachers.

Attrition

The study was designed to follow the same set of teachers in each school over a 3-year span across two treatment groups, differentiated instruction or differentiated authentic assessment, and a comparison group. However, the study experienced very high attrition rates among teachers. Due to high mobility of teachers and local redistricting efforts, some teachers were replaced each year of the study. In other cases, teachers self-transferred or were transferred out of the school, transferred or were transferred to another team within the school that was not participating in the study, or simply stopped participating. At the conclusion of the study there were a total of 76 teachers.

Student Demographics

The actual implementation of the project in the schools occurred over a 3-year period. The study was designed to follow the same set of teachers in each school with three different cohorts of students across a 3-year span. Cohort one was those students who participated in the study for 2 years (*n*=724). Within this cohort were two different grade levels, students beginning in grade 6 (*n*=352) and students beginning in grade 7 (*n*=372). Cohort two was those students who participated in the study for 3 years (*n*=314). This cohort was composed only of those students who entered the study as sixth graders and exited as eighth graders. Cohort three was those students who participated in the study for 1 year. This cohort was composed of 923 sixth graders and 74 eighth graders. One school requested that eighth grade students be tested in the first year of the project.

Data Collection

Baseline data were collected in the fall of the second year of the study for students in grades 6 and 7; in Years 3, 4, and 5 students were re-assessed in the spring as they exited each participating middle school.

Data Analysis

Teacher questionnaire. All teachers participating in the study were asked to complete the Middle School Teacher Questionnaire (MSTQ) prior to the project beginning or during their first year if they did not start the project in the first year. Teachers were also asked to complete the MSTQ at the end of the project.

Many teachers who completed the MSTQ prior to the larger project's implementation did not complete the MSTQ at the conclusion of the project due to attrition. Hence, pre-post project comparisons were not possible. However, using a two factor between subjects design (state and treatment), a series of analyses of variance procedures (ANOVAs), controlling for Type I error, were conducted to determine if statistically significant differences existed on the teachers' responses to the pre-project survey questions between states or treatments. No statistically significant differences were found. Because there were no statistical differences in responses, teachers' responses across states and treatments were aggregated and only descriptive statistics were computed. To avoid any misinterpretations of the data because of teacher attrition rates only the pre-project survey are presented.

Student questionnaire. Using a two-factor between subjects design (state and treatment), a series of ANOVAs, controlling for Type I error, were conducted to determine if statistically significant differences existed.

Because there were no differences in student responses within cohorts or within schools for any content area, all cohorts and schools were collapsed for each content area. For each content area survey, descriptive analyses were performed item-by-item. (Upon request individual cohort or school descriptive statistics can be obtained.)

Results

Student responses to many of the questions were similar regardless of subject area considered. Teacher's responses sometimes confirmed and sometimes differed from the pattern of responses of the students.

The majority of students in all classrooms reported listening to the teacher lecture, working alone on drills, and working on the same assignment as other students daily. In addition, students reported working alone on individual contracts and participating in class discussions where the teacher seemed interested in new ways of solving problems at least weekly. The majority of students also reported never having individual conferences with the teachers.

Teachers' responses also reflected the student responses about typical instructional practice in all subject area classrooms. The majority of teachers reported using learning contracts less than once per year and using independent studies only twice a year or less. Teachers also indicated using lecture, whole group and small heterogeneous group working on the same assignment at least weekly, while individuals and small heterogeneous groups working on different assignments and small homogeneous group working on the same assignment were used less often.

Students from all areas also reported teachers used example activities and performance on classroom activities to assess what they already knew prior to instruction at least weekly. However, the majority of students reported they were never allowed to skip an assignment because they already knew the material, never received different materials or assignments from other students, and were never allowed choices in selecting a project or class work. Teachers agreed with students on the type of pre-assessment strategies used and the frequency of their use. Teachers also reported they never or rarely used student choices with advanced learners or struggling learners. However, teachers indicated they used varying materials based on students reading level, and adjusted the time, length or depth of the assignment at least monthly for both groups of learners.

Students in all areas reported they were often or always able to keep up with the instruction and assignments. The majority of students reported the teacher often or always taught material so that the students could pass the end of chapter tests, and nearly half of the students reported lessons were often or always based directly on the textbook. Additionally, students indicated rarely or never were their interests considered in what they learned or activities they did, nor were they allowed choices about what they learn. Teachers agreed that the textbook was frequently used, however, in contrast to student responses, teachers believed students' interests were addressed. The majority of teachers indicated textbooks and student questions and interests were important or extremely important in determining the content they taught.

Most students agreed or strongly agreed they worked well independently, worked best for a grade honor or privilege, showed their best learning when they did a project or

took multiple-choice tests. In addition, students agreed or strongly agreed they preferred learning activities that would aid them in remembering information for later testing times, as well as activities where new, creative or very different ideas are encouraged, listened to, and discussed. Students in all content areas agreed or strongly agreed they were learning things that were important to them, they were working to their potential, and they preferred to work with students who shared similar interests. Furthermore, students agreed or strongly agreed they liked the opportunity to revise their work before the final grade, there was more to a subject than getting the right answer, but the teacher tended to think that there was a best way to answer a question. Teacher responses suggested there was not a match between the student's preferred learning style and the teaching style. In contrast to student preferences, teachers indicated rarely or never using flexible grouping based on student interest with advanced learners, and only sometimes with struggling learners. Teachers reported using projects to assess student achievement twice a month or less. Teachers also reported inconsistent use of multiple choice items, with 50% indicating using these items sometimes to never, while the other 50% used multiple choice items often or always.

The majority of students reported the teacher was often or always the decision maker when it came to grades. However, a large percentage of students indicated the teacher only sometimes clearly explained the grading criteria. Students from all areas indicated tests, assignments, projects, hard work, and individual improvement were all very important in determining their grade. In addition, students reported how they did compared to other students was not important. Teacher responses on grading issues tended to agree with the student responses. The majority of teachers reported the teacher was often or always the sole decision maker when it came to grades. Teachers also indicated tests, projects, homework, class participation, and individual improvement were all important or extremely important in determining grades. However, teachers reported effort was extremely important, while how the student did compared to the rest of the class was only somewhat important.

Conclusions

Although this study provides only a glimpse into teachers' classrooms, several conclusions seem warranted.

- There appears to be room for improvement in developing teachers' skills in addressing academic diversity in middle school classrooms.
- Teachers' make little use of strategies (instructional or structural) that would enable the academic diversity of students to be better addressed.

The degree that teachers' practices are narrow in scope at the pre-assessment, instructional and summative phases of instruction have a strong hold and are persuasive in the school environment which may in fact be one of the biggest obstacles in moving teachers toward addressing academic diversity. Results from this study suggest that teachers practice traditional schooling that should be questioned and re-examined prior to

them being able to consider an educational innovation such as differentiation of instruction and/or the use of differentiated authentic assessments for addressing the varying levels of student academic diversity in the middle school classroom.

References

Ames, N. L. (1998) *Middle-grades curriculum, instruction, and assessment*. Paper presented for the Office of Educational Research and Improvement on Early Adolescence, Washington, DC.

Argetsinger, A. (1999, April 28). Maryland panel rethinks middle schools. *Washington Post*, p. B1.

Beane, J. A. (2001). Reform and reinvention. In T. S. Dickenson (Ed.), *Reinventing the middle school* (pp. xiiv-xxii). New York: RoutledgeFalmer.

Beane, J. A. (1999). Middle schools under siege: Points of attack. *Middle School Journal, 30*(4), 3-9.

Brandt, R. (1998). *Powerful learning*. Alexandria, VA: Association for Supervision and Curriculum Development.

Callahan, C. M., Tomlinson, C. A., Moon, T. R., Brighton, C. M., & Hertberg, H. L. (in preparation). Feasibility of high-end learning in the diverse middle school.

Callahan, C. M., Tomlinson, C. A., Reis, S. N., & Kaplan, S. N. (2000). TIMSS and high ability students: Message of doom or opportunity for reflection? *Phi Delta Kappan, 81*, 787-790.

Carnegie Council on Adolescent Development. (1989). *Turning points: Preparing American youth for the 21st century* (Abridged Version). Washington DC: Author.

Clark, D. C., & Clark, S. N. (2000). Developmentally responsive curriculum and standards-based reform: Implications for middle level principals. *NASSP Bulletin, 84*(615), 1-13.

Council of Chief State School Officers. (2000). *State student assessment programs annual survey, Spring 2001*. Washington, DC: Author.

Dickenson, T. S. (2001). *Reinventing the middle school*. New York: RoutledgeFalmer.

Erickson, H. L. (1998). *Concept-based curriculum and instruction: Teaching beyond the facts*. Thousand Oaks, CA: Corwin.

Gallagher, J., Harradine, C. C., & Coleman, M. R. (1997). Challenge or boredom? Gifted students' views on their schooling. *Roeper Review*, 19, 132-136.

George, P. S. (2001). The evolution of middle schools. *Educational Leadership, 58*(4), 40-44.

Goldsmith, L. T., & Kantrov, I. (2000). Evaluating middle grades curricula for high standards of learning and performance. *NASSP Bulletin, 84*(615), 30-39.

Jackson, A. W., & Davis, G. A. (2000). *Turning Points 2000: Educating Adolescents in the 21st Century*. New York: Teachers Press.

Kulik, J. A., & Kulik, C. C. (1997). Ability grouping. In N. Colangelo & G. A. Davis (Eds), *Handbook of gifted education* (pp. 54-66). Boston: Allyn and Bacon.

Lando, B. Z., & Schneider, B. H. (1997). Intellectual contributions and mutual support among developmentally advanced children in homogeneous and heterogeneous work/discussion groups. *Gifted Child Quarterly, 41*, 44-57.

Lee, V. E., Smith, J. B., Perry, T. E., & Smylie, M. A. (1999). *Social support, academic press, and student achievement: A view from the middle grades in Chicago. Improving Chicago's schools*. A report of the Chicago Annenberg Research Project. Chicago: Consortium on Chicago School Research.

Lipsitz, J., Jackson, A. W., & Austin, L. M. (1997). What works on middle-grades school reform. *Phi Delta Kappan, 78*, 517-19.

Lipsitz, J., Mizell, M. H., Jackson, A. W., & Austin, L. M. (1997). Speaking with one voice: A manifesto for middle-grades reform. *Phi Delta Kappan, 78*, 533-540.

Maker, C. J., & Nielson, A. B. (1995). *Curriculum development and teaching strategies for gifted learners* (2nd ed.). Austin, TX: Pro-Ed.

Manning, M. L. (2000). Child-centered middle schools: A position paper. *Association for Childhood Education International, 76*, 154-59.

McEwin, K., Dickinson, T., & Jenkins, D. (1996). *America's middle schools: Practices and progress. A 25-year perspective*. Columbus, OH: National Middle School Association.

Midgley, C., & Edelin, K. C. (1998). Middle school reform and early adolescent well-being: The good news and the bad. *Educational Psychologist, 33*, 195-206.

Moon, T. R., Tomlinson, C. A., & Callahan, C. M. (1995). *Academic diversity in middle school: Results of a national survey of middle school administrators and teachers*. (Research Monograph, No. 95124). Storrs, CT: The National Research Center on the Gifted and Talented, University of Connecticut.

National Middle School Association. (1995). *This we believe: Developmentally responsive middle schools*. Westerville, OH: Author.

Peterson, D. W. (2001, January). *On the road: In search of excellence in middle level education*. Paper presented at the Annual Winter Workshop of the Minnesota Association of Secondary School Principals, Minneapolis, MN.

Plucker, J. A., & McIntire, J. (1996). Academic survivability in high-potential, middle school students. *Gifted Child Quarterly, 40*, 7-14.

Rogers, K. B. (1998). Using current research to make "good" decisions about grouping. *NASSP Bulletin, 82*(595), 38-46.

Sapon-Shevin, M. (1996). Beyond gifted education: Building a shared agenda for school reform. *Journal for the Education of the Gifted, 19*, 194-213.

Stix, A. (2000). Bridging standards across the curriculum with portfolios. *Middle School Journal, 32*(1), 15-25.

Tomlinson, C. A. (2001). *How to differentiate instruction in mixed-ability classrooms*, (2nd ed.). Alexandria, VA: Association for Supervision and Curriculum Development.

Tomlinson, C. A. (1994). Gifted learners: The boomerang kids of middle school? *Roeper Review, 16*, 177-182.

Tucker, M. S., & Codding, J. B. (1998). *Standards for our schools: How to set them, measure them, and reach them*. San Francisco: Jossey-Bass Publishers.

Westberg, K. L., Archambault, F. X., Dobyns, S. M., Salvin, T. J. (1993). The classroom practices observation study. *Journal for the Education of the Gifted, 16*, 120-146.

Wiggins, G., & McTighe, J. (1998). *Understanding by design*. Alexandria, VA: Association for Supervision and Curriculum Development.

Williamson, R. D., Johnston, J. H., & Kanthak, L. M. (1995). Agenda: The achievement agenda for middle level schools. *Schools in the Middle, 5*(2), 6-9.

Table of Contents

Table of Contents (continued)

List of Tables

List of Tables (continued)

List of Tables (continued)

List of Tables (continued)

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Introduction

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Review of the Literature

The distinct social, psychological, and academic needs of early adolescents have long been recognized. Junior high schools, typically including grades 7 through 9, were first established because the upper grades of primary schools were seen as failing to meet the needs of early adolescents (Clark & Clark, 1993). More academic challenge to support intellectual growth as well as ways to address the developmental needs of young adolescents were called for by reform-minded educators (Clark & Clark, 1993). However, the growth of junior high schools generated several waves of criticism including: fragmented curriculum taught in departmentalized classes; heavy emphasis on teacher lectures and students' passive observation; predominant reliance on textbooks; tracking students by ability; and inadequate teacher training, particularly in the area of early adolescents' psychosocial, emotional, and cognitive development (Clark & Clark, 1993). While the middle school movement has sought to address these issues, the middle school as it has evolved has not escaped criticism.

One of the most pivotal concerns voiced in the literature on the middle school is the lack of academic rigor (Beane, 1999; Gallagher, Harradine, & Coleman, 1997; Tucker, & Codding, 1998; Williamson, Johnston, & Kanthak, 1995). Tucker and Codding (1998) recently called middle schools "the wasteland of our primary and secondary landscape" (p. 153). Specific criticisms concerning the lack of academic progress of middle school students include:

- a lack of curricular focus on core academic courses and analytical skills leading students to focus away from school and even become alienated from it;
- a lack of preparation for either high school or meaningful employment;
- a dramatic increase in inflexible ability grouping as children enter middle school, restricting at-risk students' access to challenging curricula and contributing to subsequent low achievement (Ames, 1998; Argetsinger, 1999; Carnegie Council on Adolescent Development, 1989; McEwin, Dickinson, & Jenkins, 1996).

Some critics have suggested that overemphasizing social, psychological, physical, and emotional needs of middle school students has contributed to schools that do not academically challenge students. In apparent response to these criticisms the most significant change in the 2000 edition of *Turning Points* is the designation of student success and achievement as the primary goal, and as a more important goal than any

other recommendation made. Jackson and Davis (2000) explicitly stated, "Let us be clear. The main purpose of middle grades education is to promote young adolescents' intellectual development" (p. 10). All other recommendations in *Turning Points 2000*, including those related to social and emotional development, are designed to lead to the goal of student intellectual development.

Characteristics of Middle School Learners

Understandings of the developmental characteristics of early adolescents drive beliefs about what is educationally appropriate for these students. The National Middle School Association (NMSA) (1995) has compiled a synthesis of these characteristics, which are divided into five areas: intellectual, moral, physical, emotional/psychological, and social development.

NMSA (1995) describes young adolescents' intellectual development as follows. Young adolescents . . .

- display a wide range of individual intellectual development,
- are in a transition period from concrete thinking to abstract thinking,
- are intensely curious and have a wide range of intellectual pursuits, few of which are sustained,
- prefer active over passive learning experiences,
- prefer interaction with peers during learning activities,
- respond positively to opportunities to participate in real life situations,
- are often preoccupied with self,
- have a strong need for approval and may be easily discouraged,
- develop an increasingly better understanding of personal abilities,
- are inquisitive about adults, often challenging their authority, and always observing them,
- may show disinterest in conventional academic subjects, but are intellectually curious about the world, and
- are developing a capacity to understand higher levels of humor. (pp. 35-36)

Some of these characteristics are supported in reported studies of educators' beliefs about middle school learners and others are not. For example, teachers see middle school students as concrete thinkers, extrinsically motivated, easily discouraged, not able to think at high levels, weak in basic skills, and not very independent in their learning (Moon, Tomlinson, & Callahan, 1995); these characteristics are not supported by research.

Student Achievement Goals

Middle school programs are faced with criticism due to the perception that they have improved students' sense of emotional well-being but have yet to emphasize academic understanding and challenge (Beane, 1999; Clark & Clark, 2000; Lipsitz,

Jackson, & Austin, 1997; Lipsitz, Mizell, Jackson, & Austin, 1997; Midgley & Edelin, 1998; Williamson et al., 1995). The positive steps made toward making school a safer, happier, and healthier environment have not translated into academic gains. According to Lipsitz, Jackson et al. (1997):

> We are frankly concerned that, despite their heavy investment in middle-grades reform, many schools have not progressed beyond the stage of changing climate. We have not seen the widespread dramatic improvement in academic outcomes we had hoped for. A variety of state, national, and international studies in reading, mathematics, and science confirm that the middle grades are characterized by academic stagnation and actual loss among schools serving children in poverty. (p. 535)

These criticisms have become more prevalent due to the recent movement towards accountability and high-stakes testing, as well as recent international reports of student achievement (Callahan, Tomlinson, Reis, & Kaplan, 2000).

The middle school movement is faced with the challenge of balancing the principles of affective development and the need for achievement results (Midgley & Edelin, 1998). However, in negotiating this balance it is important that middle schools do not abandon the gains made in creating healthy social and emotional environments. Schools with high levels of academic rigor and high levels of social support have been found to achieve greater reading and math gains than schools that are focused only on one or the other dimension (Lee, Smith, Perry, & Smylie, 1999). Further, increase in school implementation of the initiatives outlined in the 1989 *Turning Points* produced increased math and language arts scores for eighth grade students in a study comparing middle schools with varying levels of implementation of the strategies (Felner et al., 1997). These findings suggest that both academic rigor and social support are needed to achieve the goals supported by the middle school movement.

Middle School Curriculum, Instruction, and Assessment

Quality curriculum in the middle school articulates a clear set of goals for learning that reflect both deep, conceptual understanding of the subject area and mastery of skills needed for increasingly expert performance (Goldsmith & Kantrov, 2000). A rigorous curriculum offers students a coherent view of the subject area by providing connections that help students see and appreciate the recurring themes, ideas, and methodologies of the discipline instead of only isolated pieces (Goldsmith & Kantrov, 2000). It provides opportunities for connections between classroom study and real-world applications, helping students to recognize the practical utility of their developing knowledge (Goldsmith & Kantrov, 2000). A rigorous curriculum requires products that are useful and applicable to the real world that arise from a variety of assessment techniques including performance tasks, projects, and portfolios (Beane, 1999; Brandt, 1998; Erickson, 1998; Jackson & Davis, 2000; Maker & Neilson, 1995; Manning, 2000; National Middle School Association, 1995; Stix, 2000; Tomlinson, 2001; Wiggins & McTighe, 1998).

It is also important that curricula not underestimate the intellectual capabilities of early adolescents. However, curriculum of this caliber does not appear to be the basis of what has been implemented through textbooks in middle school classrooms. According to one district mathematics supervisor (Goldsmith & Kantrov, 2000):

> In reviewing curricula we found some books had hardly anything new from year to year. Those books presented the same activities, the same concepts, year after year. There was just no depth. (p. 34)

Classroom practices also seem to be characterized by one general curriculum with teachers relying on traditional teacher-directed, whole class instruction (George, 2001; Moon et al., 1995). Presentation, question-and-answer opportunities, practice drills and re-teaching compose the most common instructional sequence in middle school classrooms (George, 2001; Moon et al., 1995). Studies of schools across the nation find very little differentiation of instruction or flexible grouping taking place, despite the predominant use of heterogeneous classes (Moon et al., 1995; Plucker & McIntire, 1996; Westberg, Archambault, Dobyns, & Salvin, 1993). These findings are in direct contrast with school organizational structures (e.g., interdisciplinary teams) that have been deliberately implemented in the middle school to support collaboration among school faculty, for focusing on individual students' differences, and for the sharing and pooling of expertise (Moon et al., 1995).

Academic Diversity in the Middle School

Despite recommendations from national organizations and scholars that teachers work to accommodate student academic diversity within their classrooms through curriculum and instructional modifications (Jackson, & Davis, 2000; Manning, 2000; National Middle School Association, 1995), they do not appear to be using strategies that could benefit diverse learners on a regular basis in the classroom (Moon et al., 1995). This disregard of academic diversity effects students on both ends of the ability spectrum. While students with learning difficulties and other differently-abled students require modifications of curriculum and instruction to achieve success, advanced learners also require curricular modifications to reach their potential. Middle schools have been justifiably criticized for not providing services for the gifted (Tomlinson, 1994). At the same time that one-size-fits-all teaching is occurring, the smallest numbers of classes are provided for advanced learners, with offered classes typically only being in the areas of math and language arts (VanTassel-Baska, 2000).

In a study of high achieving middle schools, Peterson (2001) found frequent use of tracking, with all schools tracking in math and many in language arts. George (2001), in a recent study of Florida middle schools, found that the vast majority of middle schools provided advanced classes in at least math and language arts, if not also social studies and science, for gifted and high-ability students. The use of special classes is also supported by findings that middle school teachers and principals continue to believe that special classes are appropriate for remedial, special education and advanced learners (Moon et

al., 1995). However, the use of tracked classes is counter to one of the key principles of the middle school movement, heterogeneously-grouped classes.

Student Grouping in Middle Schools

Heterogeneous grouping of students is one of the hallmarks of the middle school movement as a consequence of the rejection of tracking students by ability (Jackson & Davis, 2000; National Middle School Association, 1995). Advocates for eliminating tracking are concerned about the effect of lowered expectations on homogenously grouped struggling students and the disruption caused by grouping gifted students together for portions of the day (Sapon-Shevin, 1996), despite evidence that gifted students benefit from being grouped together (Kulik & Kulik, 1997; Lando & Schneider, 1997; Rogers, 1998).

Heterogeneous grouping has several drawbacks for students with diverse learning needs. First, the elimination of ability groups in middle schools does not guarantee that the resulting heterogeneous classrooms are high-level and challenging (Midgley & Edelin, 1998). Even researchers who advocate heterogeneous grouping recognize the problems associated with this arrangement. Sapon-Shevin (1996) writes, "few educators would advocate equal treatment if by that we meant giving every child the same kind of educational experiences at the same pace, using the same materials, and so on. Neither can it be argued that all students will emerge the same (equality of outcomes) regardless of how well (or badly) they are treated" (p. 198). Yet this appears to be what is occurring in middle school classrooms. Students are working at the same pace using the same materials.

Although structural changes have occurred within middle schools, such as the use of heterogeneous home groups within the school, it seems that little has changed in the ways students are taught. Changes in structure without changes in curricula have been implicated as part of the reasons that middle schools have not accomplished their achievement goals (Beane, 2001; Dickenson, 2001; Midgley & Edelin, 1998).

Key Questions Related to Academic Diversity in the Middle School

As indicated earlier, this study is part of a larger study on addressing academic diversity as well as an update to a national study reported in 1995 on educators' beliefs and practices in addressing academic diversity in the middle school by The National Research Center on the Gifted and Talented (NRC/GT) at the University of Virginia. Key questions for the current study include:

Teacher Questions

- To what degree do middle school classrooms appear to engage in developmentally appropriate structures and practices likely to address the wide range of academic readiness, interests, and learning profiles inevitable in middle level populations?

- What is the nature of the curriculum and instruction at the middle level and to what degree does it seem appropriately responsive to academic diversity?
- How do middle level teachers enact the concept of differentiating or modifying curriculum and instruction based on learner readiness, interest, and learning profile?

Student Question

- Are students' response patterns of their perceptions about their classrooms consistent with what is reported by teachers?

Study Design

Sample

States

Middle schools (grades 6-8) were invited to participate from the Collaborative School District Database of the NRC/GT based on the state testing programs in place at the time the study was planned. Schools that participated in the study represented three states with two states located on the East Coast and one in the Southwest. Information reported by each state's chief school officer (state superintendent) in the annual Council of Chief State School Officers (CCSSO) state assessment program survey (CCSSO, 2000) was used to create the overviews of these states' testing programs which follow. While the original intent of the study was to classify each state according to the type of accountability tied to student outcomes, it became apparent early on in the study, that regardless of the type of accountability reported by the CCSSO, teachers in all states considered the assessment programs in their states to be high-stakes. Therefore, we could not clearly control for differences in the testing environments across the three states.

State One. This state's assessment program consisted of legislatively-mandated criterion-referenced exams in reading, writing, science, and social studies in eighth grade. Also in place was an end-of-course exam in Algebra I. State officials indicated that the primary purpose of the program was to provide an accurate measure of student achievement in these areas, with the results being used as a gauge for institutional accountability.

State Two. This state's assessment program consisted of two state legislatively-mandated components related to the middle school years: (a) assessments of the state's content standards; and (b) a norm-referenced achievement test battery. The standards-based assessments were given to middle school students in eighth grade in English, mathematics, history, science, and technology. A norm-referenced assessment was administered in the fall to all sixth grade students. State officials indicated that the

assessments were for instructional purposes, student accountability, and school accountability.

State Three. In this state assessment program, eighth grade students were administered criterion-referenced performance assessments in reading, writing, language usage, math, science, and social studies. State officials indicated that the program was for instructional purposes and school accountability. In addition, high school graduation requirements included passing objective tests in reading, mathematics, and citizenship starting in seventh grade.

Schools

Nine middle schools participated in the project representing four school districts in the three states described above. Schools were located in two small urban school districts, a large suburban school district, and a large urban school district.

Each school was designated as a treatment site: differentiation and assessment, differentiated authentic assessment only, or comparison. Within each school, one interdisciplinary team of teachers at each grade level participated. Students who were assigned to the participating team served as the student sample. State One contained three schools, each representing a treatment (differentiation, assessment, and comparison); State Two contained four schools representing each treatment, with the assessment treatment having two schools; and State Three contained two schools, with only the differentiation and comparison treatments represented.

Instrumentation

Middle School Teacher Questionnaire

The middle school teacher questionnaire used in this study was a modification of a survey used previously in a nationwide sample of middle school teachers (Moon et al., 1995). The questionnaire contained 13 pages of questions that solicited information on (a) the background of the teacher, (b) the teacher's beliefs about classroom issues, and (c) the teacher's curriculum, instructional, and assessment practices. A variety of question formats were used to gather the information. Some questions used a 4-point Likert scale (e.g., strongly disagree to strongly agree), other questions used a 6-point graduated frequency scale (e.g., never use to use daily). For each question related to decision-making practices, two formats were used: (a) a 4-point Likert scale ranging from "Not Important" to "Very Important," and (b) a ranking format based on ranking the eight most influential factors for each decision. Because teachers tend to rate most factors as important or very important, at some point in the decision-making process factors become weighted by their relative importance. Therefore, teachers were also asked to rank the relative importance of each factor. This ranking format was used to generate variation among individual factors. Detailed descriptions of the factors for the sections indicated are provided below.

Teacher background. This section of the questionnaire contained questions related to the teacher's sex, racial/ethnic status, highest academic degree earned, type of teacher certification/endorsement held, discipline(s) and the grade level(s) the teacher was primarily responsible for teaching, and full-time teaching experience at the elementary, middle, and secondary levels.

Teacher beliefs. Questions in this section of the questionnaire included teacher beliefs about reasons for possible lack of learning options provided in classrooms to address academically diverse learners.

Teacher's curriculum, instruction, and assessment practices. In this section of the survey, questions were asked about the use of (a) particular instructional strategies used to address students' varied readiness levels and learning needs, (b) influence on instruction of particular types of student assessment, and (c) decision-making processes relative to curriculum, instruction, and assessment practices.

Middle School Student Content Questionnaires

These questionnaires were developed to assess students' perceptions in each of their classrooms in each subject areas (Language Arts, Math, Science, and Social Studies). All questionnaires contained the same items with the only difference being the specific content area being inquired about. Several questions on these questionnaires mimicked questions on the teacher questionnaire. This was done to obtain students' perceptions on the same issues we had presented to the teachers. The initial questionnaires were piloted in January, 1996 with a sample of Virginia middle school students. Students' feedback on the questionnaires resulted in several revisions to clarify particular items.

Teacher Attrition

The study was designed to follow the same set of teachers in each school over a 3-year span across two treatment groups, differentiated instruction or differentiated authentic assessment, and a comparison group. However, the study experienced very high attrition rates among teachers. Due to high mobility of teachers and local redistricting efforts, some teachers were replaced each year of the study. In other cases, teachers self-transferred or were transferred out of the school, transferred or were transferred to another team within the school that was not participating in the study, or simply stopped participating. Table 1 presents the teacher attrition rate for each school. At the conclusion of the study there were a total of 76 teachers.

Table 1

Teacher Attrition Rates for Each School Participating in the Study

	School	Pre N	Post N	Attrition Rate
State One	Haden (C)	22	5	73%
	Howard (D)	28	7	75%
	Rockford (P)	22	15	32%
	Marshall (P)	27	10	63%
State Two	Cleveland (C)	28	8	71%
	Franklin (D)	27	15	56%
	Langley (P)	18	6	67%
State Three	Parkway (C)	20	8	40%
	Greene (D)	19	2	90%

C = Comparison
D = Differentiated Instruction
P = Differentiated Authentic Assessment

Student Attrition

The study was designed to follow the same set of students in each school over a 3-year span across two treatment groups, differentiated instruction, differentiated authentic assessment, or a comparison group. However, there was some student attrition over the course of the study due to several factors: student mobility, transfers to non-participating teams, and redistricting of schools. Table 2 presents the attrition rate for each student cohort by each school.

Teacher Demographics

Teacher demographic data are presented in Tables 3-5 for each school participating in the project. In many of the schools, teachers did not respond to all questions; therefore, percentages oftentimes do not total 100%.

Table 2

Student Attrition Rates for Each School

		Cohort 1				Cohort 2			Cohort 3		
	School	Subset*	Pre	Post	Attrition Rate	Pre	Post	Attrition Rate	Pre	Post	Attrition Rate
State One	Haden (C)	A	46	26	43%	30	12	60%	25	18	28%
		B	30	22	27%						
	Howard (D)	A	96	53	45%	117	72	38%	125	120	4%
		B	82	75	9%						
	Rockford (P)	A	47	34	28%	93	27	71%	87	51	41%
		B	81	61	25%						
	Marshall (P)	A	108	90	17%	65	18	72%	91	18	80%
		B	57	28	51%						
State Two	Cleveland (C)	A	76	44	42%	79	39	51%	126	105	17%
		B	81	55	32%						
	Franklin (D)	A	111	53	52%	130	46	65%	165	147	11%
		B	101	46	54%						
	Langley (P)	A	121	65	56%	87	51	41%	128	109	15%
		B	118	59	50%						
State Three	Parkway (C)	A	25	17	32%	39	23	41%	27	27	0%
		B	39	28	28%						
	Greene (D)	A	67	55	18%	68	47	31%	152	144	5%
		B	88	55	37%						

*A = Students who participated 6th/7th grades
*B = Students who participated 7th/8th grades
C = Comparison
D = Differentiated Instruction
P = Differentiated Authentic Assessment

Table 3

Grade Level and Subject Area Assignment by School (Percentages)

		State One				State Two			State Three	
		Haden (C) *n*=22	Howard (D) *n*=28	Rockford (P) *n*=22	Marshall (P) *n*=27	Cleveland (C) *n*=28	Franklin (D) *n*=27	Langley (P) *n*=18	Parkway (C) *n*=20	Greene (D) *n*=19
Grade Level	6	27	54	32	22	29	19	28	10	37
	7	23	25	23	33	21	30	39	10	32
	8	23	21	14	30	14	4	33	5	26
Subject Area	English	23	29	32	30	11	30	33	10	26
	Social Studies	23	32	23	15	32	15	17	5	26
	Mathematics	36	36	14	15	11	22	17	5	26
	Science	27	32	14	15	11	19	22	10	26

C = Comparison
D = Differentiated Instruction
P = Differentiated Authentic Assessment

Table 4

Teaching Experience and Certification Credentials by School (Percentages)

		State One				State Two			State Three	
		Haden (C) *n*=22	Howard (D) *n*=28	Rockford (P) *n*=22	Marshall (P) *n*=27	Cleveland (C) *n*=28	Franklin (D) *n*=27	Langley (P) *n*=18	Parkway (C) *n*=20	Greene (D) *n*=19
K-5 School Experience	≤ 1 year	18	18	9	19	4	11	11	10	11
	2-5 years		14	9	4	11	4	11		11
	6-10 years		4	5	15		15			
	≥ 11 years	9	18	5	7		4			11
6-8 School Experience	≤ 1 year	5	11	9	11	4	4	17	5	5
	2-5 years	18	18	18	26	29	30	17	5	26
	6-10 years	23	29	18	19	11	19	6	15	11
	≥ 11 years	27	32	18	30	18	30	39		26
Secondary School Experience	≤ 1 year	9	4	14	7	4	11		10	11
	2-5 years	9	18	5			11	6		11
	6-10 years	5	11		4	7	4	6		
	≥ 11 years	14	4	5			4	6		5

C = Comparison
D = Differentiated Instruction
P = Differentiated Authentic Assessment

Table 4 (continued)

Teaching Experience and Certification Credentials by School (Percentages)

		State One				State Two			State Three	
		Haden (C) *n*=22	Howard (D) *n*=28	Rockford (P) *n*=22	Marshall (P) *n*=27	Cleveland (C) *n*=28	Franklin (D) *n*=27	Langley (P) *n*=18	Parkway (C) *n*=20	Greene (D) *n*=19
Current School Experience	≤ 1 year	5	25	41	26	18	7	22	5	5
	2-5 years	32	29	18	26	29	33	39	10	63
	6-10 years	32	32		22	11	22	11	10	
	≥ 11 years	5	4	5	11	7	19	11		
Teaching Certification	K-8	14	32	23	30	25	15	17		26
	6-8	18	14	9	30	11	11	22	15	5
	7-12	27	21	14	15	32	41	50	25	21
	Other	32	32	14	33	18	22	22		26
Highest Academic Degree	Bachelor's	46	61	46	37	32	56	56	10	26
	Master's	27	25	9	44	29	22	22	15	36

C = Comparison
D = Differentiated Instruction
P = Differentiated Authentic Assessment

Table 5

Gender, Race, Teaching Satisfaction, and Student SES Levels by School (Percentages)

		State One				State Two			State Three	
		Haden (C) *n*=22	Howard (D) *n*=28	Rockford (P) *n*=22	Marshall (P) *n*=27	Cleveland (C) *n*=28	Franklin (D) *n*=27	Langley (P) *n*=18	Parkway (C) *n*=20	Greene (D) *n*=19
Gender	Female	46	71	41	70	43	67	67	15	16
	Male	27	18	14	15	14	15	11	10	47
Race/Ethnicity	Caucasian	55	86	36	70	46	70	50	25	63
	African American	14	4	9	11	7	4	22		
	Hispanic			5		4		6		
	Asian/Pacific Islander						4			
	Native American	5								
Satisfaction with Teaching	Generally Low	5	4	5		4				
	Low to Medium	14	7		4	4		6		
	Medium		4	9	11	4	19	11	5	5
	Medium to High	27	29	18	26	25	30	50	15	5
	Generally High	23	43	9	30	25	26	17	5	58
Student SES Level	Generally Low	9		23	4	4		6		
	Low to Medium	41	7	36	4	36	52	39	20	
	Medium	23	21		41	18	22	28	5	32
	Medium to High		54	5	30	4	4	11		37
	Generally High		4							

C = Comparison
D = Differentiated Instruction
P = Differentiated Authentic Assessment

State One

This state had four schools participating in the project for a total of 99 teachers when the project began. Haden served as a comparison school with 22 teachers participating. Howard served as the differentiation school, with 28 teachers participating. Rockford served as one assessment school, with 22 teachers participating. Marshall served as a second assessment school, with 27 teachers participating.

Based on the information given by teachers in the pre-project survey, Caucasian females comprised the majority of each school's teaching cadre, with all grade levels and core content areas represented. The majority of teachers in each school reported at least 2 years teaching experience at the middle school with most indicating that their experience was with the school participating in the project. However, less than half of the teachers in each school reported holding a 6-8 teaching certificate.

When asked about their degree of satisfaction with teaching, teachers, in general, reported a medium high to generally high level of satisfaction. Overall, teachers reported that their students were from all socio-economic levels. However, teachers from the comparison school and one assessment school reported that their students represented low to middle socio-economic levels. The other assessment school and the differentiation school indicated that their students, in general, were from middle to high socio-economic levels.

State Two

This state had three schools participating in the project for a total of 73 teachers when the project began (27 in the differentiation school, 18 in the assessment school, 28 in the comparison school). Based on the information given by teachers in the pre-project survey, Caucasian females comprised the majority of each school's teaching force, with all grade levels and core content areas represented. The majority of teachers in each school reported at least 2 years teaching experience at the middle school level. However, less than 25% of the teachers reported holding a 6-8 teaching certificate.

When asked about their degree of satisfaction with teaching, teachers, in general, reported a medium high to generally high level of satisfaction. Teachers also reported that their students generally came from low to middle socio-economic environments.

Cleveland served as a comparison school, with 28 teachers participating. Franklin served as a differentiation school, with 27 teachers participating. Langley served as an assessment school, with 18 teachers participating.

State Three

This state had two schools participating in the project for a total of 39 teachers when the project began. Parkway served as a comparison school, with 20 teachers participating. Greene served as a differentiation school, with 19 teachers participating.

Based on the information given by teachers in the pre-project survey, females and males were about equally represented in the comparison school with most teachers being male in the differentiation school. Regardless of gender, all teachers reported being Caucasian. Each grade level and content area were represented in the project by both schools, with the majority of teachers reporting at least 2 years teaching experience at the middle school level. Less than 20% of the teachers in both schools reported holding a 6-8 teaching certificate.

When asked about their degree of satisfaction with teaching, teachers, in general, reported a medium to high level of satisfaction. No teachers reported a low level of satisfaction with teaching. When asked about the socio-economic level of their students, the differentiation school reported their students coming from middle to high socio-economic environments, while the comparison school teachers reported their students coming from low to middle socio-economic environments.

Student Demographics

The actual implementation of the project in the schools occurred over a 3-year period. Demographic data are presented within each student cohort group, aggregated by treatment condition for the variables of student gender, race/ethnicity, and gifted identification. The study was designed to follow the same set of teachers in each school with three different cohorts of students across a 3-year span. Cohort one was those students who participated in the study for 2 years (n=724). Within this cohort were two different grade levels, students beginning in grade 6 (n=352) and students beginning in grade 7 (n=372). Cohort two was those students who participated in the study for 3 years (n=314). This cohort was composed only of those students who entered the study as sixth graders and exited as eighth graders. Cohort three was those students who participated in the study for 1 year. This cohort was composed of 923 sixth graders and 74 eighth graders. One school requested that eighth grade students be tested in the first year of the project.

Student Cohort 1

Cohort 1 had two sets of students. In both subsets, students in this cohort participated in the project for 2 complete school years. Subset A consisted of students who began the project as sixth graders and exited as seventh graders. These were students who were sixth graders in the fall of the second year of the project. Subset B was comprised of students who began the project as seventh graders and exited as eighth graders. These were students who were seventh graders in the fall of the second year of the project.

Subset A. For each school, demographic information collected is presented in Tables 6-8.

Table 6

Subset A: Student Gender by Treatment Within State

	Females	Males
State One		
Comparison Group	20 (77)	6 (23)
Differentiation Group	15 (27)	40 (73)
Assessment Group	55 (59)	40 (41)
State Two		
Comparison Group	27 (64)	15 (36)
Differentiation Group	12 (43)	16 (57)
Assessment Group	31 (51)	29 (48)
State Three		
Comparison Group	13 (81)	3 (19)
Differentiation Group	25 (46)	30 (54)

Note: Numbers in parentheses represent percentages.
Overall totals are not the same across tables due to missing data.

Table 7

Subset A: Student Racial/Ethnic Group by Treatment Within State

	Caucasian	African American	Asian/ Pacific Islander	Hispanic	Native American
State One					
Comparison Group	21 (81)	5 (19)			
Differentiation Group	53 (96)	2 (4)			
Assessment Group	64 (69)	23 (25)		4 (4)	1 (1)
State Two					
Comparison Group	21 (50)	14 (33)	7 (17)		
Differentiation Group	17 (61)	1 (4)	10 (36)		
Assessment Group	17 (28)	41 (68)		2 (2)	1 (1)
State Three					
Comparison Group	14 (88)	2 (13)			
Differentiation Group	34 (62)	18 (33)		3 (6)	

Note: Numbers in parentheses represent percentages.
Overall totals are not the same across tables due to missing data.

Table 8

Subset A: Student Gifted Status by Treatment within State

	Identified Gifted	Non-Identified
State One		
Comparison Group	26 (100)	
Differentiation Group	18 (33)	37 (67)
Assessment Group	21 (23)	71 (77)
State Two		
Comparison Group	2 (5)	40 (95)
Differentiation Group	8 (29)	20 (71)
Assessment Group	9 (15)	52 (85)
State Three		
Comparison Group	16 (100)	
Differentiation Group	55 (100)	

Note: Numbers in parentheses represent percentages.
Overall totals are not the same across tables due to missing data.

The comparison group within State One was 77% female, 81% Caucasian and 19% African American. All of the students were identified as gifted and talented. For the differentiation group in State One, 27% were female, 96% Caucasian and 4% African American. Thirty-three percent of the students had been identified as gifted and talented. Within the assessment group, 59% were female, 69% Caucasian, 25% African American, 4% Hispanic, and 1% Native American. Twenty-three percent of the students were identified as gifted and talented. Overall demographics for State One were 52% female, 79% Caucasian, 17% African American, 2% Hispanic, with less than 1% Native American. Thirty-eight percent of the students were identified as gifted and talented.

For the comparison group within State Two, 64% were female, 50% Caucasian, 33% African American, and 17% Asian/Pacific Islander. Only 5% of the students in the comparison group were identified as gifted and talented. Within the differentiation group, 43% were female, 61% Caucasian, 36% Asian/Pacific Islander, and 4% African American. Twenty-nine percent of the students were identified as gifted and talented. For the assessment group, 51% were female, 68% African American, 28% Caucasian, 2% Hispanic and 1% Native American. Fifteen percent of the students were identified as gifted and talented. Overall demographics for State Two were 53% female, 43% African American, 42% Caucasian, 13% Asian/Pacific Islander, and 1% Hispanic and Native American. Fifteen percent of the students were identified as gifted and talented.

For State Three, the comparison group was comprised of 81% female, 88% Caucasian and 13% African American. All of the students were identified as gifted and talented. Within the differentiation group, 46% were female, 62% Caucasian, 33% African American, and 6% Hispanic. All of the students in the differentiation group were also identified as gifted and talented. Overall demographics for State Three were 54% female, 67% Caucasian, 28% African American, and 4% Hispanic, with all students identified as gifted and talented.

Subset B. For each school, demographic information collected is presented in Tables 9-11. Subset B consisted of those students who began the project as seventh graders and exited as eighth graders. These were students who were seventh graders in the fall of the first year of the project.

Table 9

Breakdown by Student Gender by Treatment Within State

	Females	Males
State One		
Comparison Group	14 (67)	7 (33)
Differentiation Group	46 (62)	28 (38)
Assessment Group	49 (54)	35 (39)
State Two		
Comparison Group	35 (70)	15 (30)
Differentiation Group	21 (46)	25 (54)
Assessment Group	35 (61)	22 (39)
State Three		
Comparison Group	15 (58)	11 (42)
Differentiation Group	25 (53)	22 (47)

Note: Numbers in parentheses represent percentages.
Overall totals are not the same across tables due to missing data.

Table 10

Breakdown by Student Racial/Ethnicity by Treatment Within School

	Caucasian	African American	Asian/ Pacific Islander	Hispanic	Native American
State One					
Comparison Group	9 (43)	12 (57)			
Differentiation Group	65 (88)	6 (8)	3 (4)		
Assessment Group	64 (71)	20 (22)	4 (4)		1 (<1)
State Two					
Comparison Group	48 (96)	2 (4)			
Differentiation Group	25 (54)	5 (11)		16 (35)	
Assessment Group	18 (32)	31 (54)	4 (7)	3 (5)	1 (2)
State Three					
Comparison Group	21 (81)	4 (15)		1 (1)	
Differentiation Group	20 (43)	26 (55)	1 (1)		

Note: Numbers in parentheses represent percentages.
Overall totals are not the same across tables due to missing data.

Table 11

Breakdown by Gifted Status by Treatment Within State

	Identified Gifted	Non-Identified
State One		
Comparison Group	4 (19)	17 (71)
Differentiation Group	10 (14)	64 (86)
Assessment Group	7 (8)	82 (92)
State Two		
Comparison Group	17 (34)	33 (66)
Differentiation Group	45 (98)	1 (2)
Assessment Group	21 (37)	36 (63)
State Three		
Comparison Group	26 (100)	
Differentiation Group	32 (68)	15 (32)

Note: Numbers in parentheses represent percentages.
Overall totals are not the same across tables due to missing data.

Within State One, for the comparison group 67% were female, 57% African American and 43% Caucasian. Nineteen percent of the students were identified as gifted and talented. For the differentiation group, 62% were female, 88% Caucasian, 8% African American, and 4% Asian/Pacific Islander. Fourteen percent of the students were identified as gifted and talented. For the assessment group, 54% were female, 71% Caucasian, 22% African American, 4% Asian/Pacific Islander, and less than 1% Native American. Of the students participating in the assessment treatment, 8% were identified as gifted and talented. Overall demographics for State One were 59% female, 75% Caucasian, 21% African American, 4% Asian/Pacific Islander, and less than 1% Native American. Eleven percent of the students were identified as gifted and talented.

For State Two, within the comparison group 70% were female, 96% Caucasian and 4% African American. Thirty-four percent of the students were identified as gifted and talented. For the differentiation group, 46% were female, 54% Caucasian, 35% Hispanic, and 11% African American. Ninety-eight percent of the students were identified as gifted and talented. Within the assessment group, 61% were female, 54% African American, 32% Caucasian, 7% Asian/Pacific Islander, 5% Hispanic, and 2% Native American. Thirty-seven percent of the students were identified as gifted and talented. Overall demographics were 58% female, 59% Caucasian, 26% African American, 12% Hispanic, 3% Asian/Pacific Islander, and 1% Native American. Fifty-four percent of the students were identified as gifted and talented.

Within State Three, for the comparison group, 58% were female, 81% Caucasian, 15% African American, and 1% Hispanic. All of the 26 students were identified as gifted and talented. For the differentiation group, 53% were female, 55% African American, 43% Caucasian, and 1% Asian/Pacific Islanders. Sixty-eight percent of the students were identified as gifted and talented. Overall demographics for State Three were 55% female, 56% Caucasian, 41% African American, and 1% Hispanic and Asian/Pacific Islander. Seventy-nine percent of the students were identified as gifted and talented.

Student Cohort 2. Cohort 2 students were those students who participated in the project for 3 complete school years. These students entered the project in the fall of their sixth grade year and exited the project in the spring of their eighth grade year. Demographic information collected is presented in Tables 12-14 for States One and Two. Because of student attrition and/or redistricting, State Three had no students who participated in the project for 3 complete school years.

Table 12

Breakdown by Student Gender by Treatment Within State

	Females	Males
State One		
Comparison Group	12 (86)	2 (14)
Differentiation Group	44 (57)	33 (43)
Assessment Group	33 (49)	27 (51)
State Two		
Comparison Group	17 (52)	16 (48)
Differentiation Group	23 (52)	21 (48)
Assessment Group	24 (48)	26 (52)

Note: Numbers in parentheses represent percentages.
Overall totals are not the same across tables due to missing data.

Table 13

Breakdown by Student Race/Ethnicity by Treatment Within State

	Caucasian	African American	Asian/ Pacific Islander	Hispanic	Native American
State One					
Comparison Group	6 (43)	8 (57)			
Differentiation Group	70 (91)	5 (7)	2 (3)		
Assessment Group	48 (71)	16 (24)	4 (6)		
State Two					
Comparison Group	17 (52)	11 (33)		5 (15)	
Differentiation Group	23 (52)	3 (7)	2 (5)	16 (36)	
Assessment Group	20 (40)	27 (54)	1 (2)	2 (4)	

Note: Numbers in parentheses represent percentages.
Overall totals are not the same across tables due to missing data.

Table 14

Breakdown by Gifted Status by Treatment Within State

	Identified Gifted	Non-Identified
State One		
Comparison Group	2 (14)	12 (86)
Differentiation Group	59 (77)	18 (23)
Assessment Group	6 (91)	62 (9)
State Two		
Comparison Group	17 (52)	16 (48)
Differentiation Group	44 (100)	
Assessment Group	5 (10)	45 (90)

Note: Numbers in parentheses represent percentages.
Overall totals are not the same across tables due to missing data.

Within State One, for the comparison group, 86% were female, 57% African American, 43% Caucasian, and 3% Asian/Pacific Islanders. Fourteen percent of the students were identified as gifted and talented. Within the differentiation group, 57% were female, 91% Caucasian, 7% African American, and 3% Asian/Pacific Islander.

Seventy-seven percent of the students were identified as gifted and talented. For the assessment group, 49% were female, 71% Caucasian, 24% African American, and 6% Asian/Pacific Islander. Ninty-one percent of the students were identified as gifted and talented. Overall demographics for State One included 56% female, 78% Caucasian, 18% African American, and 4% Asian/Pacific Islander.

Within State Two, for the comparison group, 52% were female, 52% Caucasian, 33% African American, and 15% Hispanic. Fifty-two percent of the students were identified as gifted and talented. Within the differentiation group, 52% were female, 52% Caucasian, 36% Hispanic, 7% African American, and 5% Asian/Pacific Islander. All students in this group were identified as gifted and talented. For the assessment group, 48% were female, 54% African American, 40% Caucasian, 4% Hispanic, and 2% Asian/Pacific Islander. Only 10% of the students were identified as gifted and talented. Overall demographics were 50% female, 47% Caucasian, 32% African American, 18% Hispanic, and 2% Asian/Pacific Islander. Thirty-eight percent of the students were identified as gifted and talented.

Student Cohort 3. Cohort Three were those students who participated in the project for only 1 year. Students entered the project in the fall of their sixth grade year and exited the project in the spring of their sixth grade year. These were students who participated in the project the last year that the project was in operation. Demographic information collected are presented in Tables 15-17 for each of the three states.

Table 15

Breakdown by Student Gender by Treatment Within State

	Females	Males
State One		
Comparison Group	17 (74)	6 (26)
Differentiation Group	68 (52)	61 (48)
Assessment Group	90 (49)	91 (51)
State Two		
Comparison Group	50 (39)	77 (61)
Differentiation Group	91 (55)	75 (45)
Assessment Group	67 (50)	67 (50)
State Three		
Comparison Group	15 (56)	12 (44)
Differentiation Group	72 (47)	80 (53)

Note: Numbers in parentheses represent percentages.
Overall totals are not the same across tables due to missing data.

Table 16

Breakdown by Student Race/Ethnicity by Treatment Within State

	Caucasian	African American	Asian/ Pacific Islander	Hispanic	Native American
State One					
Comparison Group	14 (58)	10 (42)			
Differentiation Group	106 (75)	30 (21)	4 (3)		
Assessment Group	151 (78)	36 (19)	5 (3)		2 (<1)
State Two					
Comparison Group	80 (60)	30 (23)		22 (17)	
Differentiation Group	72 (40)	23 (13)	4 (2)	78 (43)	
Assessment Group	42 (29)	88 (62)	2 (1)	10 (7)	
State Three					
Comparison Group	19 (68)	5 (18)	2 (7)		2 (7)
Differentiation Group	107 (68)	42 (27)	7 (4)	1 (<1)	

Note: Numbers in parentheses represent percentages.
Overall totals are not the same across tables due to missing data.

Table 17

Breakdown by Gifted Status by Treatment Within State

	Identified Gifted	Non-Identified
State One		
Comparison Group	7 (29)	17 (71)
Differentiation Group	30 (21)	111 (79)
Assessment Group	40 (21)	154 (79)
State Two		
Comparison Group	13 (10)	119 (90)
Differentiation Group	51 (28)	126 (72)
Assessment Group	19 (13)	124 (87)
State Three		
Comparison Group	28 (100)	
Differentiation Group	111 (70)	47 (30)

Note: Numbers in parentheses represent percentages.
Overall totals are not the same across tables due to missing data.

Within State One, for the comparison group 74% were female, 58% Caucasian and 42% African American. Twenty-nine percent of the students were identified as gifted and talented. For the differentiation group, 52% were female, 75% Caucasian, 21% African American, and 3% Asian/Pacific Islander. Twenty-one percent of the students were identified as gifted and talented. Within the assessment group, 49% were female, 78% Caucasian, 19% African American, 3% Asian/Pacific Islander, and less than1% Native American. Twenty-one percent of the students were identified as gifted and talented. Overall demographics for State One included 52% female, 76% Caucasian, 21% African American, 3% Asian/Pacific Islander, and less than 1% Native American.

For State Two, within the comparison group 39% were female, 60% Caucasian, 23% African American, and 17% Hispanic. Ten percent of the students were identified as gifted and talented. For the differentiation group, 55% were female, 43% Hispanic, 40% Caucasian, 13% African American, and 2% Asian/Pacific Islander. Twenty-eight percent of the students were identified as gifted and talented. Within the assessment group, 50% of the students were female, 62% African American, 29% Caucasian, 7% Hispanic, and 1% Asian/Pacific Islander. Thirteen percent of the students were identified as gifted and talented. Overall demographics for State Two included 49% female students, 43% Caucasian, 31% African American, 24% Hispanic, and 1% Asian/Pacific Islander. Eighteen percent of the students were identified as gifted and talented.

For State Three, within the comparison group 56% were female, 68% Caucasian, 18% African American, 7% Asian/Pacific Islander and Native American. The entire comparison group of students was identified as gifted and talented. For the differentiation group, 47% were female, 68% Caucasian, 27% African American, 4% Asian/Pacific Islander, and less than 1% Hispanic. Seventy percent of the students were identified as gifted and talented. Overall demographics for State Three included 49% female, 68% Caucasian, 25% African American, 5% Asian/Pacific Islander, and less than 1% Hispanic.

Data Collection

Baseline data were collected in the fall of the second year of the study for students in grades 6 and 7; in Years 3, 4, and 5 students were re-assessed in the spring as they exited each participating middle school.

Data Analysis

Teacher questionnaire. All teachers participating in the study were asked to complete the Middle School Teacher Questionnaire (MSTQ) prior to the project beginning or during their first year, if they did not start in the first year of the project. Teachers were also asked to complete the MSTQ at the end of the project.

Due to attrition, many teachers who completed the MSTQ prior to the larger project's implementation did not complete the MSTQ at the conclusion of the project. Hence, pre-post project comparisons were not possible. However, using a two factor between subjects design (state and treatment), a series of analyses of variance procedures (ANOVAs), controlling for Type I error, were conducted to determine if statistically significant differences existed on the teachers' responses to the pre-project survey questions between states or treatments. No statistically significant differences were found. Because there were no statistical differences in responses, teachers' responses across states and treatments were aggregated and only descriptive statistics were computed. To avoid any misinterpretations of the data because of teacher attrition rates only the pre-project survey are presented.

Student questionnaire. Using a two-factor between subjects design (state and treatment), a series of ANOVAs, controlling for Type I error, were conducted to determine if statistically significant differences existed.

Because there were no differences in student responses within cohorts or within schools for any content area, all cohorts and schools were collapsed for each content area. For each content area survey, descriptive analyses were performed item-by-item. (Upon request, individual cohort or school descriptive statistics can be obtained).

Middle School Teacher Results

Results for the teachers' responses are grouped and presented in the following categories: teachers' responses to pre-assessment are presented first, followed by teachers' responses to content decisions and delivery of content, assessment of student achievement, grading, and other issues related to academic concerns.

Pre-assessment practices. Teachers were asked how often they used certain strategies to pre-assess students (Table 18). The majority of teachers indicated using observation of student responses and discussion and example activities at least weekly for pre-assessing students' knowledge, understandings, and skills. Previous year's grades, state testing results, and portfolios were strategies that the majority of teachers reported using once a year or less as pre-assessment techniques. Only 10% of teachers reported using formal pre-tests once a week or more.

Use of pre-assessment data. The majority of teachers reported using pre-assessment data to modify the content of activities given to students, the type of product required of students, the type of activities given to students, the scheduling of student activities, and student work group arrangements at least monthly (Table 19). Less than 15% of teachers reported daily use of pre-assessment data to modify instruction and only about one-third used data once a week or more to modify instruction.

Instructional Practices

Factors in Determining Content to be Taught

Teachers were asked the importance of certain factors in determining the content they taught and to rank the importance of each (Table 20). The majority of teachers rated the general skill level of their students to be extremely important in determining content taught. Forty-seven percent of teachers also reported local standards and curriculum guides, state or national curriculum standards, and general readiness level of students as extremely important. A large percentage of teachers considered textbooks, knowledge gained from pre-assessment, teacher-selected themes, student questions/interests, key concepts, and the general readiness level of students as important in determining content taught. Forty-one percent of teachers reported previous year's end-of-grades as unimportant. Interestingly, teachers were evenly divided about the importance of state testing programs: 30% somewhat important, 29% important and extremely important. When asked to rank order the factors, teachers ranked state or national curriculum standards as the most important, local standards and curriculum guides as second in importance followed by key concepts/principles of core disciplines (Ranking 1). Knowledge gained from student pre-assessment and student questions/interests were ranked very low by the teachers.

Table 18

Use of Pre-Assessment Methods (*N*=211)

How often do you use the following strategies to pre-assess students?	Never %	Once per year %	2x per year %	1 or 2x per month %	1 or 2x per week %	Every day %	Mean* (Std Dev)
Pre-test	12	12	25	42	9	1	3.27 (1.21)
Example activities	9	2	8	25	33	23	4.36 (1.48)
Individual conferences	20	10	14	37	13	6	3.26 (1.54)
Portfolios	54	9	12	13	7	5	2.24 (1.60)
Results from last year's state mandated tests	26	34	21	12	6	2	2.43 (1.29)
Students' grades from the previous year	42	35	15	6	2	1	1.92 (1.06)
Observation of student performance on project or product	4	6	8	34	27	21	4.32 (1.34)
Observation of student responses and discussion	5	1	3	17	27	48	4.99 (1.35)
Journal writing	31	4	4	24	28	10	3.44 (1.85)

*Scale Range = 1 (Never) to 6 (Everyday)

Table 19

Use of Pre-Assessment Information (*N*=211)

How often do you use pre-assessment data to modify:	Never %	Once per year %	2x per year %	1 or 2x per month %	1 or 2x per week %	Every day %	Mean* (Std Dev)
Content of learners' activities?	10	4	13	43	21	10	3.88 (1.36)
Type of product required of a student?	16	8	14	36	15	11	3.59 (1.55)
Type of activity you choose for a student?	13	5	13	33	25	11	3.81 (1.51)
Scheduling of student activities?	19	5	14	28	20	14	3.62 (1.67)
Student work group arrangements?	12	2	11	43	20	13	3.92 (1.45)

*Scale Range = 1 (Never) to 6 (Every day)

Table 20

Factors in Determining Instructional Content

How important are each of these factors in determining the content you teach?	Not Important %	Somewhat Important %	Important %	Extremely Important %	Mean* (Std Dev)	Ranking (1 to 8) %							
						1	2	3	4	5	6	7	8
Textbooks	10	37	43	10	2.52 (0.83)	3	6	12	9	18	19	14	19
Local standards/benchmarks/ curriculum guides	1	14	39	47	3.29 (0.79)	24	24	19	10	7	8	4	4
State or national curriculum standards	4	15	34	47	3.23 (0.89)	27	25	12	8	4	4	7	12
Knowledge gained from student pre-assessment	5	32	44	19	2.77 (0.98)	1	3	7	16	14	11	21	27
Previous year's end of grade tests	41	44	11	3	1.78 (0.93)	7	7	7	10	3	7	32	29
State testing programs	11	30	29	29	2.74 (1.06)	10	15	16	18	4	13	11	15
Teacher selected themes	9	30	48	13	2.63 (0.85)	10	5	3	7	23	16	17	19
Student questions/interests	3	28	53	17	2.81 (0.77)	2	2	4	8	18	32	20	14
Key concepts/principles of core disciplines	12	46	42	1	3.30 (0.76)	15	7	23	18	12	6	11	9
General skill level of my students	1	5	42	52	3.43 (0.69)	13	21	13	20	14	9	6	4
General readiness level of my students	2	11	40	47	3.31 (0.78)	12	15	12	16	15	13	13	5

*Scale Range = 1 (Not Important) to 4 (Extremely Important)

Influence of academic needs of student sub-groups. Teachers were asked how much of their instructional practice was shaped by the academic needs of certain student groups and to rank the influence of the groups on their decision-making (Table 21). All of the groups were reported to have some influence on teachers' instructional practices, with average learners being reported by 62% of the teachers as having a strong influence, followed by learners with disabilities (48%), gifted learners (47%), and remedial learners (46%). Consideration of the whole class as a unit and average learners were ranked as the most important groups shaping instructional practices followed by average learners, gifted learners, and remedial learners. Limited English Proficiency (LEP)/Bilingual learners were reported to have the least influence on the instructional decision-making of their teachers.

Use of particular instructional activities. Teachers were asked how often certain instructional activities were used in their classrooms with advanced learners and with struggling learners (Table 22). With advanced learners, learning contracts; tiered assignments; curriculum compacting; learning/interest centers; varied instructional materials; student choice; and flexible grouping based on student interests, ability, or learning profile were all strategies that teachers reported using twice a year or less. Furthermore, 83% of teachers reported never using learning contracts, 58% reported never using tiered assignments, 79% reported never compacting curriculum, and 74% reported never creating learning centers based on core content for advanced learners. In addition, 53% reported never using flexible grouping based on learning profiles. However, pre-assessment strategies, advanced organizers, independent study, cooperative learning strategies, and graphic organizers were strategies reported used with advanced learners at least monthly by the majority of teachers.

In general, teachers reported more frequent use of the listed strategies for struggling learners. For example, the majority of teachers reported pre-assessing, using varied instructional materials, allowing student choices, employing flexible grouping based on student ability/readiness level for struggling learners at least monthly. However, 45% of teachers reported never using learning contracts, 66% reported never using curriculum compacting, and 53% reported never using interest centers with struggling learners.

The responses to the use of these strategies were similar to patterns of responses reported with advanced learners. A majority of teachers reported using independent study, graphic organizers, and cooperative learning at least once a month with both groups of learners. Surprisingly, 79% of teachers reported never using curriculum compacting with advanced learners, and 66% of these teachers reported never using this strategy with struggling learners. Thirteen percent report using the strategy once a month or more with struggling learners, but no teacher reported using this strategy more than once a month with advanced learners.

Table 21

Ratings and Rankings of Influence of Student Group on Instructional Decision-Making

How much of your instructional practice is shaped by the academic needs of each of the following groups?	No Influence %	Rarely Influence %	Some Influence %	Strong Influence %	Dominates %	Mean* (Std Dev)	Ranking (1 to 7) %						
							1	2	3	4	5	6	7
Culturally diverse learners	4	18	53	23	3	2.99 (0.89)	5	7	9	16	22	26	15
Remedial learners	2	12	34	46	6	3.37 (0.94)	7	14	18	22	20	13	6
LEP/Bilingual learners	20	25	37	16	1	2.50 (1.07)	1	3	9	6	19	19	43
Advanced/gifted learners	4	9	27	47	13	3.51 (1.04)	14	10	23	20	10	14	9
Learners with disabilities	4	6	37	48	6	3.41 (0.93)	2	24	24	15	12	14	7
Average learners	1	2	18	62	17	3.86 (0.84)	35	26	11	10	9	5	3
Consideration of the whole class as a single unit	4	4	30	37	25	3.69 (1.10)	37	15	7	11	7	7	16

*Scale Range = 1 (No Influence) to 5 (Dominates)

Table 22

Percentage of Teachers' Reported Use of Particular Instructional Strategies

How often are each of the following instructional strategies used in your classroom . . .	With advanced learners?							With struggling learners?						
	1	2	3	4	5	6	Mean* (Std Dev)	1	2	3	4	5	6	Mean* (Std Dev)
Pre-assessment of student's current knowledge, understanding, and skills	10	7	15	36	26	7	3.76 (1.41)	8	8	13	29	33	8	3.94 (1.39)
Learning contracts	83	15	2	0	0	0	1.16 (0.45)	45	10	21	18	4	3	2.33 (1.44)
Tiered assignments (multiple assignments given to different students at the same time that are related to the same concept or topic but differ in complexity)	58	25	16	0	0	0	1.54 (0.79)	22	12	19	21	20	5	3.13 (1.62)
Advanced organizer (an activity or reading which equips students with a scaffolding that connects current knowledge with new concepts and provides an organizational framework for the learning that is to follow)	17	4	8	34	26	11	3.75 (1.64)	16	5	10	27	28	14	3.83 (1.67)
Computer programs that focus on basic skills only	49	7	12	21	9	2	2.36 (1.58)	36	5	16	25	15	3	2.84 (1.62)
Computer programs that focus on problem solving, critical thinking or advanced understanding	34	4	20	26	12	5	2.86 (1.65)	37	8	20	18	11	5	2.70 (1.64)
Independent study	7	9	20	29	22	13	3.82 (1.46)	17	12	20	25	16	10	3.40 (1.58)
Curriculum compacting (student tests out of material to be studied by rest of class and works on a different assignment)	79	12	9	0	0	0	1.27 (0.65)	66	12	8	8	4	1	1.74 (1.29)

*Scale Range = 1=Never, 2=Once pre year, 3=2x per year, 4=1 or 2x per month, 5=1 or 2x per week, 6=Every day

Table 22 (continued)

Percentage of Teachers' Reported Use of Particular Instructional Strategies

How often are each of the following instructional strategies used in your classroom . . .	With advanced learners?							With struggling learners?						
	1	2	3	4	5	6	Mean* (Std Dev)	1	2	3	4	5	6	Mean* (Std Dev)
Learning centers based on core content	74	17	9	0	0	0	1.31 (0.67)	44	11	16	18	8	4	2.41 (1.58)
Varied instructional materials for the same lesson	23	24	53	0	0	0	2.27 (0.86)	8	4	9	23	37	19	4.33 (1.44)
Varied instructional materials in a given unit of study	21	27	53	0	0	0	2.29 (0.84)	7	4	9	23	35	23	4.37 (1.46)
Students choices (about content, process, and/or product)	45	31	25	0	0	0	1.78 (0.83)	17	9	24	33	13	4	3.26 (1.40)
Flexible grouping based on student interest	46	30	24	0	0	0	1.75 (0.83)	18	10	23	29	16	4	3.24 (1.46)
Flexible grouping based on student ability or student readiness level	36	29	35	0	0	0	1.96 (0.87)	10	6	20	32	22	10	3.77 (1.41)
Flexible grouping based on student learning style or profile	53	22	25	0	0	0	1.69 (0.87)	24	9	20	22	16	9	3.20 (1.66)
Cooperative learning strategies	3	2	7	31	40	17	4.48 (1.22)	2	2	9	33	37	17	4.48 (1.13)
Graphic organizers (webs, semantic maps, flow charts, and other devices that allow students to view and construct relationships between ideas	7	2	5	31	43	12	4.31 (1.33)	8	2	6	28	44	12	4.31 (1.33)
Interest centers/groups (a learning center based on student interest)	52	8	18	12	8	2	2.14 (1.47)	53	10	17	13	6	2	2.13 (1.45)

*Scale Range = 1=Never, 2=Once pre year, 3=2x per year, 4=1 or 2x per month, 5=1 or 2x per week, 6=Every day

Use of the classroom accommodations. Teachers were asked how often they used particular accommodations to meet the learning needs of advanced and struggling learners (Table 23). Similar patterns were reported for both groups of learners. The majority of teachers reported using time, length and pace adjustments for assignments, using peers as tutors, and adjusting depth of content at least weekly for both groups of learners. However, a majority of teachers reported never using tape recorded material or rarely using adults as mentors with either type of learner. Teachers reported modifying tests (completing a written test orally) and assignments (completing a written assignment orally), individually administering a test, individually tailoring an assignment, varying materials based on student reading levels, or adjusting the length of assignments and depth of content more frequently for struggling learners than for advanced learners.

Use of student grouping arrangements. The majority of teachers reported that at least weekly they used direct instruction with the whole class, whole group seat work, and small heterogeneous groups working on the same assignments (Table 24). Forty-six percent of teachers reported daily use of direct instruction with 32% of teachers reporting that daily the whole class worked on the same seat assignment. The majority of teachers also reported that in their classrooms the following arrangements occurred at least monthly: individual students working on independent assignments, small heterogeneous groups working on different assignments, and small homogeneous groups working on the same or different assignments.

Table 23

Percentage of Teachers Reporting Use of Particular Strategies to Accommodate Student Needs

How often do you use the following strategies to accommodate the needs . . .	of advanced learners?							of struggling learners?						
	1	2	3	4	5	6	Mean* (Std Dev)	1	2	3	4	5	6	Mean* (Std Dev)
Modify time student takes to complete an assignment	13	7	7	21	31	21	4.08 (1.69)	2	1	4	18	33	41	4.99 (1.18)
Tape record content material for the student to listen to	67	7	12	6	5	4	1.84 (1.44)	53	6	14	10	12	6	2.37 (1.70)
Individually administer a test other than a make up for student absence	46	13	14	18	7	2	2.30 (1.50)	23	8	18	34	15	4	3.17 (1.51)
Individually tailor an assignment as part of planning for instruction	28	8	11	22	19	11	3.24 (1.80)	16	4	12	25	24	20	3.94 (1.68)
Adjust pacing according to student's needs	8	6	4	17	21	45	4.64 (1.67)	2	1	3	16	26	52	5.17 (1.16)
Use peers as tutors	11	3	8	25	33	20	4.19 (1.58)	6	2	9	29	33	22	4.43 (1.34)
Use adults as mentors	49	19	15	9	5	4	2.12 (1.45)	43	14	17	11	9	7	2.48 (1.65)
Vary materials based on student reading levels	20	7	9	25	24	15	3.64 (1.76)	8	4	5	28	33	23	4.37 (1.47)
Adjust length of assignment according to student needs	16	4	7	19	26	30	4.17 (1.80)	4	1	6	19	33	39	4.89 (1.27)
Adjust depth of content according to student needs	14	5	7	17	27	30	4.21 (1.78)	6	1	6	19	32	36	4.76 (1.38)
Allow student to do a written test orally	51	16	18	8	3	5	2.08 (1.44)	25	9	18	30	9	8	3.12 (1.59)
Allow student to do a written assignment orally	49	12	15	13	7	4	2.25 (1.55)	32	9	19	24	12	5	2.83 (1.61)

*Scale Range = 1=Never, 2=Once pre year, 3=2x per year, 4=1 or 2x per month, 5=1 or 2x per week, 6=Every day

Table 24

Use of Student Groupings

How often do your students work in the following groupings?	Never %	Once per year %	2x per year %	1 or 2x per month %	1 or 2x per week %	Every day %	Mean* (Std Dev)
Lecture, direct instruction, and/or discussion with the class as a *whole*	0	0	0	3	52	46	5.39 (0.71)
Whole group working on the *same* seat work	0	0	1	6	62	32	5.22 (0.73)
Individual students working on *independent* assignments	1	6	13	32	35	13	4.31 (1.15)
Small *heterogeneous* groups working on *same* assignment	2	0	6	29	54	10	4.59 (0.96)
Small *heterogeneous* groups working on *different* assignments	10	9	16	45	16	4	3.60 (1.29)
Small *homogeneous* groups working on *same* assignment	17	8	11	33	27	4	3.56 (1.52)
Small *homogeneous* groups working on *different* assignments	26	8	16	35	12	3	3.08 (1.53

Influence on Teacher Willingness to Try New Instructional Practices. Factors found to have the strongest influence on teacher willingness to try new instructional practices were teachers' own openness to risk, perceived benefit for their own personal/professional growth, how much their students would enjoy the new practice, and concerns about the effect on student learning in general (Table 25). A majority of teachers reported that confidence in research findings, administrator support, concerns that new practices were not developed for their students, concerns about the effect on their teaching evaluations, and concerns about the effect on student performance on standardized assessments had some influence on their willingness to try new instructional practices.

Table 25

Percentage of Teachers Reporting Willingness to Try Instructional Practices

How do the following factors influence your willingness to try new instructional practices?	No Influence (1)	Some Influence (2)	Strong Influence (3)	Mean* (Std Dev)
Confidence in research findings	14	65	22	2.06 (0.61)
Administrator support	8	52	40	2.31 (0.64)
My own openness to risk in general	4	44	51	2.44 (0.62)
Perceived benefit for my own personal/professional growth	5	34	62	2.55 (0.62)
How much my students will enjoy it	1	25	74	2.72 (0.51)
Concern that new practices are not developed for students like mine	33	55	13	1.78 (0.66)
Concern about the effect on my teaching evaluation	38	52	10	1.71 (0.65)
Concern about the effect on student performance on standardized assessments	13	51	36	2.21 (0.69)
Concern about the effect on student learning in general	2	39	59	2.55 (0.58)

*Scale Range = 1 (No Influence) to 3 (Strong Influence)

Factors influencing differentiation. When asked how certain factors affected the degree to which they were able to differentiate instruction for the students they taught, a majority of teachers indicated that the amount of planning time (or lack of) was a factor that hindered them in differentiating instruction (Table 26). Budget restrictions, range of academic diversity in the classroom, and concerns about classroom management were also seen by a large proportion of teachers (42-49%) as hindering their efforts to differentiate instruction. However, their own training and expertise in differentiation (58%), their personal philosophy (59%), and the knowledge and support of other faculty (50%) were reported as factors that helped the majority of teachers differentiate instruction in the classroom. Factors that were reported by the majority to be neither hindering nor helpful included the school leadership, parent expectations, range of cultural diversity in the classroom, and district-, state-, and national-level initiatives. A large proportion of teachers (41-49%) indicated that budget restrictions, student expectations, the range of academic diversity, the school schedule, and knowledge and support of other faculty neither helped nor hindered them.

Table 26

Factors That Impact Differentiation

Over the past year, how did each of the following factors affect the degree to which you were able to differentiate instruction for the students you taught?	Hindered Me (1) %	Neither Hindered Nor Helped Me (2) %	Helped Me (3) %	Mean* (Std Dev)
Concerns about classroom management	49	38	13	1.63 (0.71)
Administration/school leadership	10	61	29	2.18 (0.62)
Your own training and experience in differentiation	23	19	58	2.33 (0.85)
Availability of instructional materials	36	21	43	2.06 (0.90)
Budget restrictions	49	49	2	1.52 (0.56)
Amount of planning time	57	21	21	1.62 (0.82)
Personal philosophy of education	3	39	59	2.54 (0.59)
Student expectations	11	45	44	2.31 (0.70)
Parent expectations	13	56	31	2.16 (0.66)
Range of academic diversity in the classroom	42	41	17	1.74 (0.74)
Range of cultural diversity in the classroom	15	70	15	1.99 (0.57)
School schedule/blocks of time	35	47	18	1.82 (0.73)
Knowledge and support of other faculty	7	43	50	2.41 (0.65)
District-level mandates and initiatives	27	61	12	1.82 (0.64)
State-level mandates and initiatives	28	59	13	1.83 (0.64)
National-level mandates and initiatives	10	81	9	1.97 (0.47)

*Scale Range = 1 (Hindered Me) to 3 (Helped Me)

Responses to new instructional practice ideas. Sixty-four percent of teachers reported being enthusiastic about new instructional practices, with only 3% of teachers reporting resistance or disinterest (Table 27).

Assessment of Student Outcomes

Assessing achievement or outcomes of instruction. The majority of teachers reported at least monthly use of objective tests, student demonstrations, essays, or short-answer tests to assess student achievement, with objective tests being the most common method (Table 28). Student learning logs or journals were used less frequently, with 27% of teachers reporting never using them to assess student achievement or outcomes of instruction.

Use of certain types of item formats. The majority of teachers reported using all of the test item format options presented at least some of the time, with the least used formats being true/false-type questions and matching-type items (Table 29).

Table 27

Receptiveness to New Practices

When I read or hear about a new instructional practice I am generally:	%
Enthusiastic	64
Hesitant	16
Skeptical	16
Resistant	2
Disinterested	1

Table 28

Use of Assessment Strategies

How often do you use the following strategies to assess student achievement/outcome of instruction?	Never %	Once per year %	2x per year %	1 or 2x per month %	1 or 2x per week %	Every day %	Mean* (Std Dev)
Objective tests requiring recall of factual material only (e.g., multiple choice, fill-in-the-blank, true/false, matching)	2	4	9	59	26	0	3.99 (0.90)
Objective tests requiring analysis, synthesis, and evaluation (e.g., multiple choice, fill-in-the-blank, true/false, matching)	1	3	6	66	23	1	4.09 (0.80)
Student demonstrations or performance tasks (e.g., portfolios, projects, oral examinations)	1	0	20	58	17	4	3.99 (0.88)
Essays	10	3	18	51	18	1	3.63 (1.16)
Student learning logs or journals	27	6	8	20	23	18	3.57 (1.88)
Tests requiring a brief written response	6	1	9	60	20	4	3.93 (1.08)

*Scale Range = 1=Never, 2=Once pre year, 3=2x per year, 4=1 or 2x per month, 5=1 or 2x per week, 6=Every day

Table 29

Percentage of Teachers Reporting Use of Item Formats in Tests

How often do you use the following types of item format in your tests?	Never (1)	Rarely (2)	Some-Times (3)	Often (4)	Always (5)	Mean* (Std Dev)
Short answer questions (e.g., fill in the blank, one or two word responses, definitions)	1	8	42	42	6	3.41 (0.84)
Open-ended problems (e.g., those with several possible answers)	2	11	43	40	4	3.27 (0.89)
Essays requiring at least a paragraph response	4	15	31	42	9	3.37 (1.00)
Multiple-choice questions	1	17	32	43	7	3.35 (0.93)
True/false questions	9	34	31	23	4	2.76 (1.04)
Matching items	4	24	42	27	4	3.00 (0.94)

*Scale Range = 1 (Never) to 5 (Always)

Competency in constructing and using certain assessment techniques. The majority of teachers felt at least quite competent in using all of the assessment techniques presented as options with the exception of portfolios. Forty-three percent of teachers reported little competence and 11% reported no skills at all regarding competency with portfolios (Table 30). Approximately one-third of teachers reported feeling less than competent in using pre-assessment techniques or student learning logs or journals.

Factors affecting use of authentic assessments. Teachers were also asked to indicate how often certain environmental factors affected the degree to which they were able to use authentic assessment strategies with students (Table 31). Teachers indicated that most factors presented neither helped nor hindered the use of authentic assessment strategies. However, the amount of planning time (or lack of) was reported by the majority of teachers to be a hindrance in implementing authentic assessment strategies. Teachers' own training and experience in assessment (57%) and their personal philosophy of education (58%) were considered helpful factors.

Table 30

Competence in Assessment Techniques

How competent do you feel in constructing and using each of the following assessment techniques?	No Skills in This Area (1) %	Not Very Competent (2) %	Quite Competent (3) %	Extremely Competent (4) %	Mean* (Std Dev)
Teacher-made objective tests assessing factual information only (e.g., multiple-choice, fill-in-the blank, true/false, matching)	1	2	48	49	3.47 (0.79)
Teacher-made objective tests requiring analysis, synthesis, and evaluation (e.g., multiple-choice, fill-in-the blank, true/false, matching)	1	6	58	35	3.26 (0.66)
Performance tasks in general	0	5	65	30	3.27 (0.77)
Oral examinations	3	22	57	19	3.23 (1.59)
Portfolios	11	43	36	10	2.71 (1.55)
Projects	2	9	48	41	3.29 (0.90)
Essays	3	13	54	30	3.13 (0.91)
Student learning logs or journals	6	27	41	27	2.92 (1.03)
Pre-assessment of student learning	2	29	53	16	3.03 (1.36)

*Scale Range = 1 (No Skills) to 4 (Extremely Competent)

Table 31

Factors That Effect the Use of Authentic Assessment

Over the past year, how did each of the following environmental factors affect the degree to which you were able to use authentic assessment strategies with the students you taught?	Hindered Me (1) %	Neither Hindered Nor Helped Me (2) %	Helped Me (3) %	Mean* (Std Dev) %
Concerns about classroom management	39	51	10	1.69 (0.67)
Administration/school leadership	7	70	23	2.12 (0.58)
Your own training and experience in assessment	20	23	57	2.33 (0.85)
Availability of assessment materials	41	36	23	1.80 (0.81)
Budget restrictions	40	58	2	1.59 (0.55)
Amount of planning time	58	27	15	1.54 (0.75)
Personal philosophy of education	4	38	58	2.51 (0.64)
Student expectations regarding assessment	20	50	30	2.07 (0.74)
Parent expectations regarding assessment	19	60	21	1.99 (0.68)
Range of academic diversity in the classroom	30	49	21	1.88 (0.74)
Range of cultural diversity in the classroom	18	70	13	1.92 (0.59)
School schedule/blocks of time	35	48	18	1.80 (0.73)
Knowledge and support of other faculty	4	59	37	2.29 (0.62)
District-level mandates and initiatives	23	66	10	1.84 (0.61)
State-level mandates and initiatives	25	65	10	1.84 (0.61)
National-level mandates and initiatives	13	81	7	1.91 (0.49)

*Scale Range = 1 (Hindered Me) to 3 (Helped Me)

Professional development experiences in assessment. Teachers were asked about the means through which they had learned more about assessing student readiness and achievement (Table 32). Fifty percent of teachers reported personal experience, 42% reported self-study, 38% reported workshops, 31% reported conferences, and 29% reported university level coursework as ways they had learned more about assessment.

Table 32

Opportunities to Learn About Assessment

Check each means through which you have learned more about assessing student readiness and achievement.	%
Workshop	38
Self-study/personal reading	42
Personal experience	50
University level coursework	29
Conferences	31

Grading Practices

Sixty-four percent of teachers reported that student effort was extremely important in grading decisions (Table 33), with another 31% rating the factor as important (95% rating it important or extremely important). Eighty-five percent of the teachers also reported standards for achievement and individual progress as extremely important or important. Individual achievement relative to the rest of the class was considered less important in determining grades than were the other factors. The ranking data did not present a clear pattern of importance with the exception of individual achievement relative to the class (Ranking 1), which clearly received the lowest ranking.

Assessment methods. Teachers were also asked the degree of importance they attached to certain assessment methods when grading and to rank the factors in order of their importance (Table 34). The majority of teachers rated all of the factors as important or extremely important in grading. Ninety-two percent of teachers rated projects, 86% rated class participation, 83% rated tests/quizzes, and 63% rated homework as extremely important or important. Moreover, teachers ranked projects and tests/quizzes (Ranking 1) as the most important factors in determining grades. Homework was ranked the least important factor.

Table 33

Importance of Factors in Grading

What degree of importance do you attach to the following factors when grading?	Not Important (1) %	Somewhat Important (2) %	Important (3) %	Extremely Important (4) %	Mean* (Std Dev)	Ranking (1 to 4) %			
						1	2	3	4
Individual achievement relative to the rest of the class	12	40	37	11	2.41 (0.91)	9	11	23	58
Individual improvement/progress over the last grading period	2	14	49	36	3.11 (0.87)	20	26	38	16
Standards for achievement	1	13	52	33	3.11 (0.83)	40	15	24	21
Student effort	1	4	31	64	3.51 (0.80)	29	48	18	5

* Scale Range = 1 (Not Important) to 4 (Extremely Important)

Table 34

Importance of Assessment Methods

What degree of importance do you attach to the following when grading?	Not Important (1) %	Somewhat Important (2) %	Important (3) %	Extremely Important (4) %	Mean* (Std Dev)	Ranking (1 to 4) %			
						1	2	3	4
Tests/quizzes	1	16	58	25	3.03 (0.76)	31	22	24	24
Projects demonstrating achievement other than testing	1	8	50	42	3.29 (0.71)	32	35	22	11
Homework	2	35	49	14	2.73 (0.76)	5	18	28	49
Class participation	2	13	42	44	3.25 (0.80)	29	22	30	20

*Scale Range = 1 (Not Important) to 4 (Extremely Important)

Determining criteria for grades. The majority of teachers reported that they perceived the teacher as most often responsible for determining grading criteria, while students alone and teachers and students together only sometimes determined grading criteria (Table 35).

Table 35

Key Determinants of Grading Criteria

How often are criteria for grades in your class determined by the following factors?	Never (1) %	Rarely (2) %	Some-Times (3) %	Often (4) %	Always (5) %	Mean* (Std Dev)
The teacher	0	0	11	59	30	4.13 (0.78)
Students	11	27	47	11	4	2.66 (1.02)
Teacher and students together	9	21	48	2	1	2.83 (0.96)

*Scale Range = 1 (Never) to 5 (Always)

Other academic issues. The majority of teachers reported that they often or always felt confident in teaching their subjects, that planning for a differentiated classroom was worth the effort, that the ability levels of students should be taken into consideration when grading, that performance assessments provided a better assessment of student knowledge than multiple-choice tests, that students in a differentiated classroom were more likely to be actively engaged in learning, and that assessment in a differentiated classroom helped them understand student needs (Table 36). However, in contrast, 70% of teachers reported that the time and effort in planning and assessing projects were never or rarely worth the instructional benefits.

Students' Perceptions of Classrooms

In addition to collecting teacher data, students in participating teachers' classrooms were asked to complete a pre- and post-project survey on their perceptions of their classrooms in the content areas of language arts, social studies, mathematics, and science.

Table 36

Variety of Academic Issues

How often do you agree with the following statements?	Never (1) %	Rarely (2) %	Sometimes (3) %	Often (4) %	Always (5) %	Mean* (Std Dev)
I feel very confident in teaching my academic subject(s).	0	1	5	48	46	4.35 (0.75)
Planning for a differentiated classroom is well worth the effort.	1	2	37	41	20	3.74 (0.87)
The ability level of the student should be taken into consideration in grading an assignment.	1	3	27	44	25	3.88 (0.89)
Class behavior should be considered in determining student grades.	32	20	30	6	11	2.43 (1.32)
Performance assessments (such as oral examinations, student demonstrations, portfolios) provide a better assessment of student knowledge than do multiple-choice tests.	0	1	37	45	17	3.75 (0.80)
Assessment in a differentiated classroom helps teachers understand student achievement and learning needs.	0	1	31	52	17	3.81 (0.76)
Curriculum compacting takes too much time to plan and carry out.	2	10	60	24	6	3.20 (0.81)
In a differentiated classroom, students are more likely to be actively engaged in learning.	2	5	33	48	12	3.61 (0.89)
The time and effort in planning and assessing projects are not worth the instructional benefits.	20	50	26	4	0	2.13 (0.80)
There is always a *best* way to solve a problem (such as a math or science problem).	14	27	44	12	4	2.63 (1.00)

*Scale Range = 1 (Never) to 5 (Always)

Middle School Language Arts Classrooms

One thousand four hundred twenty-eight students (*n*=1,428) completed both the pre-project and the post-project surveys.

Classroom opportunities. Students were asked the frequency with which they were provided a variety of opportunities in their language arts classroom. The majority of students indicated on both the pre- and post-surveys that, on a daily basis, they listened to the teacher lecture and worked on the same assignment as other students. In addition, a larger percentage of students reported that, at least weekly, they worked alone on drills, practicing skills or individual contracts, and participated in class discussions where the teacher seemed interested in new ways of solving problems. Students also reported rarely having individual conferences with the teacher about their work (Table 37).

Use of preassessment strategies. When asked how their teacher attempted to gather information about what they already knew prior to starting a lesson, students reported that their teachers used example activities and their performance on classroom activities more frequently than other strategies (Table 38). Students also reported that their teachers held individual conferences, reviewed a portfolio, or administered pre-tests less often, with the majority reporting these strategies used less than monthly.

Use of classroom accommodations. Students were asked how often they were provided particular opportunities to address their learning needs (Table 39). In general, students reported that the opportunities presented occurred less than once or twice a grading period. Specifically, the majority of students indicated that they were never allowed to skip an assignment because they already knew the material, never received different assignments or used different materials from other students, were never allowed choices in selecting class work assignments, never worked with mentors, or never had learning centers in their classroom. Over 65% of the students reported never teaching language arts to other students.

Engagement in classroom activities. When asked about the instructional activities they engaged in during their language arts class, about half of the students reported that they were always able to keep up with instruction and assignments. A majority perceived that the teacher often or always taught material so that they could pass the end of chapter tests and do well on standardized tests. Roughly half of the students reported that they were never allowed choices about what they learned or did in class. Students also indicated that their interests were rarely considered in what they learned or activities they did (Table 40).

Table 37

Students' Perceptions of Opportunities in Language Arts Classrooms

How often do each of the following activities occur in your language arts class?	Never (1)		1-2 times a grading period (2)		1-2 times a month (3)		1-2 times a week (4)		1-2 times a day (5)		Mean* (Std Dev)	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
I listen to the teacher lecture—the teacher talks to the class, gives information.	4	6	9	7	8	9	18	23	61	55	4.23 (1.17)	4.13 (1.21)
I take notes while the teacher lectures.	22	25	11	13	15	19	28	27	25	18	3.22 (1.49)	3.00 (1.44)
I work alone (on drills, practicing skills, reading and answering questions, doing problems).	6	7	7	7	8	11	24	28	55	48	4.16 (1.19)	4.02 (1.22)
I participate in class discussions where the teacher seems interested in new ways of solving problems.	7	10	7	8	9	11	26	31	51	41	4.07 (1.23)	3.84 (1.31)
I work on a group project.	18	14	17	29	31	36	21	14	13	6	2.94 (1.28)	2.70 (1.07)
I work in cooperative learning groups.	20	20	12	16	17	27	27	22	24	15	3.25 (1.44)	2.95 (1.33)
I do hands-on activities in class.	22	25	15	17	19	21	25	24	19	13	3.05 (1.43)	2.82 (1.38)
I have individual conferences with the teacher about my work.	50	45	19	27	13	14	11	8	7	6	2.07 (1.31)	2.04 (1.21)
One student explains subject material or assignments to another student.	31	33	12	16	15	17	22	20	20	14	2.88 (1.54)	2.66 (1.46)
I work on the same assignment as everybody in the class.	3	2	6	5	5	6	9	8	78	80	4.54 (1.01)	4.58 (0.95)
I work alone on an individual contract or independent study.	18	21	10	13	10	13	22	18	39	35	3.53 (1.53)	3.33 (1.56)

*Scale Range = 1 (Never) to 5 (1-2 times a day)
Numbers in each cell represent percentage of students reporting.

Table 38

Students Reporting the Use of Pre-Assessment Methods in Language Arts Classroom

How often does your language arts teacher use each of these techniques to find out what you already know *before* beginning instruction?	Never (1)		1-2 times a grading period (2)		1-2 times a month (3)		1-2 times a week (4)		1-2 times a day (5)		Mean* (Std Dev)	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Gives me a pre-test.	28	40	13	18	20	20	31	18	8	4	2.78 (1.36)	2.29 (1.27)
Gives me example activities.	10	15	9	12	15	18	29	29	37	27	3.73 (1.32)	3.40 (1.38)
Has an individual conference with me.	56	53	18	23	13	13	8	7	5	4	1.87 (1.20)	1.85 (1.14)
Reviews my language arts portfolio.	39	50	19	20	15	13	17	10	10	6	2.41 (1.41)	2.02 (1.26)
Looks at my performance on a project I completed.	16	17	16	23	24	27	22	17	23	15	3.21 (1.37)	2.90 (1.30)
Looks at my performance in classroom activities.	9	12	9	10	13	15	27	28	43	35	3.84 (1.31)	3.64 (1.37)

*Scale Range = 1 (Never) to 5 (1-2 times a day)
Numbers in each cell represent percentage of students reporting.

Table 39

Students' Perceptions of Opportunities Provided for Meeting Their Learning Needs in Language Arts Classrooms

How often does each of the following events happen in your language arts class?	Never (1)		1-2 times a grading period (2)		1-2 times a month (3)		1-2 times a week (4)		1-2 times a day (5)		Mean* (Std Dev)	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
I am allowed to skip an assignment because I already know the material.	88	88	5	5	3	2	3	3	2	2	1.26 (0.80)	1.25 (0.79)
I receive different assignments from the other students in the class.	76	73	8	14	7	7	6	4	3	3	1.51 (1.04)	1.50 (0.98)
I use different materials than other students in the class.	71	70	8	14	8	6	7	5	6	5	1.68 (1.22)	1.61 (1.13)
I work with other students who have interests similar to mine.	32	32	14	20	15	17	20	15	19	16	2.81 (1.53)	2.63 (1.45)
My teacher places me in a group with students who have the same abilities or skill levels as I do.	37	36	13	17	15	21	16	15	19	11	2.66 (1.56)	2.49 (1.40)
I work with mentors who share my particular interests.	53	61	10	12	13	12	12	9	11	7	2.19 (1.48)	1.88 (1.30)
There are learning centers in my classroom that I visit individually or with other students.	68	76	9	8	9	7	9	5	6	4	1.76 (1.26)	1.53 (1.07)
I am given the opportunity to choose a class work assignment.	63	57	12	19	13	13	7	6	4	4	1.78 (1.19)	1.81 (1.15)
I get to choose a project from a list provided by the teacher.	42	35	21	32	22	22	8	6	7	6	2.17 (1.26)	2.16 (1.13)
I can suggest to my teacher a project that I feel demonstrates what I have learned.	42	49	18	21	21	15	9	7	12	9	2.31 (1.38)	2.06 (1.30)
My class uses learning groups.	41	44	12	17	15	18	18	13	14	9	2.52 (1.51)	2.24 (1.35)
Membership in the learning groups in my language arts class changes.	45	47	16	23	16	16	13	10	10	6	2.27 (1.41)	2.05 (1.23)
I teach language arts to other students.	68	66	12	15	8	8	7	6	6	5	1.70 (1.20)	1.70 (1.16)

*Scale Range = 1 (Never) to 5 (1-2 times a day)

Numbers in each cell represent percentage of students reporting.

Table 40

Engagement in Instructional Activities Reported by Students in Language Arts Classrooms

Now thinking about yourself and your teacher, how often does each of the following statements apply in this class?	Never (1)		Rarely (2)		Sometimes (3)		Often (4)		Always (5)		Mean* (Std Dev)	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
What I do in class is too difficult.	26	26	41	44	27	26	3	3	2	2	2.14 (0.92)	2.11 (0.87)
What I do in class is too easy.	15	12	27	25	35	38	17	18	6	7	2.71 (1.09)	2.82 (1.08)
I am able to keep up with instruction.	2	2	4	4	12	12	31	32	52	50	4.27 (0.93)	4.26 (0.93)
I am able to keep up with assignments.	2	2	3	5	12	12	27	32	56	49	4.34 (0.91)	4.22 (0.97)
I have choices of what I learn about in class.	53	48	20	26	15	17	6	5	7	5	1.93 (1.22)	1.95 (1.14)
I have choices of what I do in class.	49	42	22	26	18	19	5	6	6	7	1.97 (1.21)	2.10 (1.21)
What I learn about in class is based on my interests.	33	35	26	31	28	25	8	6	4	3	2.23 (1.12)	2.12 (1.06)
Activities I do in class are based on my interests.	32	35	25	28	28	27	11	7	5	3	2.32 (1.17)	2.15 (1.08)
The teacher selects a theme or concept for me to study (such as "conflict" or "tragedy") and what I do in class is related to that theme.	18	19	12	13	25	29	26	24	19	15	3.16 (1.36)	3.02 (1.31)
The teacher teaches material so I can pass the end of unit/chapter tests.	8	7	6	8	15	16	25	27	46	43	3.96 (1.24)	3.91 (1.23)
The teacher teaches materials so I do well on standardized tests.	5	4	5	6	15	18	24	25	51	46	4.10 (1.16)	4.02 (1.14)
The lessons and material the teacher chooses seem to come right from the textbook.	9	11	16	21	31	34	25	18	19	16	3.29 (1.20)	3.07 (1.21)

*Scale Range = 1 (Never) to 5 (Always)
Numbers in each cell represent percentage of students reporting.

Perceptions about classrooms. When asked about the degree to which they agreed with statements reflecting challenges, types of learning activities, and the environment in their language arts classroom, students tended to agree that class was a place where they learned things that were important to them, that they felt they were working to their potential, that they preferred learning activities that would aid them in remembering information for later testing times as well as activities where new, creative, or very different ideas were encouraged, listened to, and discussed. Students also agreed that they worked best when it was for a grade, an honor, or a privilege, that they were able to work well independently, that they showed their best learning when they did a project or when they took multiple-choice tests, and that they liked the opportunity to revise and improve their work before the final grade. Students indicated that there was more to language arts than getting the right answer, but that their teachers tended to think there was a best way to answer a question (Table 41).

Factors important in determining grades. When asked how important particular factors should be in determining their grades, students indicated that all the listed factors should be very important with the exception of how well they did compared to other students, which was rated much lower in importance (Table 42).

Responsibility for determining grading criteria. The final question on the language arts survey asked students about who determined the criteria for grading. Students reported that rarely did they and the teacher decide together and never did they alone decide how they would be graded. Instead, the teacher was the main decision-maker, with the majority of students indicating that at least some of the time the grading criteria were clearly explained to them (Table 43).

Middle School Mathematics Classrooms

One thousand three hundred and thirty-one students (n=1,331) completed both the pre-project and post-project surveys.

Classroom opportunities. Students were asked about the frequency of a variety of opportunities they were provided in their mathematics classroom. The majority of students indicated that on a daily basis they listened to the teacher lecture and worked alone on drills and practicing skills. Four-fifths of the students reported working on the same assignment as everyone else on a daily basis. In addition, for both the pre- and post-surveys, students reported that at least weekly they worked on individual contracts, took notes while the teacher lectured, and participated in class discussions where the teacher seemed interested in new ways of solving problems. About half of the students reported they never had individual conferences with the teacher about their work (Table 44). These responses were similar to the responses from the language arts surveys.

Table 41

Students' Perceptions of Their Language Arts Classrooms

We are interested in how well each one of the following statements describes the way you feel about your language arts class.	Strongly Disagree (1)		Disagree (2)		Agree (3)		Strongly Agree (4)		Mean* (Std Dev)	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
I find the work we do in language arts to be challenging.	16	17	36	43	40	33	9	7	2.41 (0.88)	2.30 (0.83)
I have to work hard to make good grades in language arts.	8	11	18	23	41	43	32	23	2.97 (0.92)	2.78 (0.92)
The pace of my language arts class is too slow for me.	22	20	54	54	16	18	8	9	2.10 (0.83)	2.15 (0.83)
Language arts class is a place where I learn things that are important to me.	8	10	13	20	49	47	30	24	3.00 (0.88)	2.85 (0.90)
I never learn anything new in language arts.	44	39	39	44	11	10	6	8	1.80 (0.89)	1.87 (0.88)
I feel as if I am working to my potential in language arts class.	7	8	15	15	47	50	31	27	3.03 (0.87)	2.96 (0.86)
I prefer learning activities in which information is given to me to be remembered for testing at a later time.	10	13	15	20	44	41	31	27	2.96 (0.93)	2.82 (0.97)
I prefer learning activities in which new, creative or very different ideas are encouraged, listened to and discussed.	4	5	9	10	44	45	43	40	3.25 (0.80)	3.20 (0.81)
Language arts is easy for me.	9	8	30	24	43	47	17	21	2.68 (0.87)	2.81 (0.86)
I struggle with the basic information and skills my language arts teacher presents.	35	36	44	44	14	14	7	6	1.92 (0.88)	1.90 (0.86)

*Scale Range = 1 (Strongly Disagree) to 4 (Strongly Agree)
Numbers in each cell represent percentage of students reporting.

Table 41 (continued)

Students' Perceptions of Their Language Arts Classrooms

We are interested in how well each one of the following statements describes the way you feel about your language arts class.	Strongly Disagree (1)		Disagree (2)		Agree (3)		Strongly Agree (4)		Mean* (Std Dev)	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
I am eager to discuss ideas because I enjoy thinking about and responding to others' ideas.	10	11	20	21	44	45	25	23	2.84 (0.92)	2.80 (0.92)
I work best when I work for a grade, an honor, or a privilege.	8	7	12	13	40	42	41	38	3.13 (0.91)	3.12 (0.88)
I am easily discouraged in language arts.	31	32	45	44	17	16	7	7	2.00 (0.88)	1.98 (0.88)
I am able to work well independently (without constant teacher attention or frequent direction).	4	4	9	10	51	49	36	37	3.17 (0.77)	3.20 (0.77)
I show my best learning when I do a project.	7	9	20	23	40	39	33	29	2.98 (0.91)	2.88 (0.93)
I show my best learning when I take a multiple-choice test.	6	9	16	22	41	41	36	29	3.08 (0.88)	2.90 (0.91)
I find projects too time-consuming and too hard.	27	22	42	42	19	23	12	13	2.17 (0.96)	2.28 (0.95)
My language arts teacher is interested in finding out what I know before she/he begins teaching.	12	16	16	20	45	45	27	19	2.86 (0.95)	2.67 (0.96)
I prefer to work with students who have interests in language arts like mine.	9	8	15	15	44	48	31	29	2.98 (0.92)	2.99 (0.87)
I enjoy doing projects.	13	17	18	24	39	36	30	23	2.86 (0.99)	2.64 (1.01)

*Scale Range = 1 (Strongly Disagree) to 4 (Strongly Agree)

Numbers in each cell represent percentage of students reporting.

Table 41 (continued)

Students' Perceptions of Their Language Arts Classrooms

We are interested in how well each one of the following statements describes the way you feel about your language arts class.	Strongly Disagree (1)		Disagree (2)		Agree (3)		Strongly Agree (4)		Mean* (Std Dev)	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
I don't know how well I'm doing in language arts class unless I get a letter or a number grade.	11	10	29	28	37	40	23	23	2.72 (0.94)	2.76 (0.91)
Comments from my teacher are better than letter or number grades.	14	15	29	28	32	34	25	22	2.69 (1.00)	2.63 (0.99)
I like to be given the opportunity to revise and improve my work (such as written assignments, projects) before getting a final grade.	5	4	7	8	38	39	50	49	3.33 (0.81)	3.32 (0.80)
My language arts teacher thinks there is a best way to answer a question.	11	12	25	27	38	38	26	23	2.79 (0.95)	2.72 (0.95)
Most of the material I learned in language arts class I have studied before.	6	9	36	37	39	41	19	13	2.70 (0.85)	2.58 (0.83)
There is more to language arts than getting the right answer.	6	7	11	13	44	48	40	33	3.18 (0.84)	3.06 (0.86)
I liked language arts when I was younger, but now it's too hard for me.	36	32	43	45	12	14	9	9	1.95 (0.92)	2.00 (0.90)
I think that language arts has many applications in everyday life.	5	7	13	15	43	45	39	33	3.17 (0.83)	3.05 (0.86)
My language arts teacher grades fairly.	5	8	8	9	38	43	48	41	3.29 (0.84)	3.16 (0.88)

*Scale Range = 1 (Strongly Disagree) to 4 (Strongly Agree)
Numbers in each cell represent percentage of students reporting.

Table 42

Students' Perceptions of the Importance of Certain Factors in Determining Grades in Language Arts Classrooms

How important do you think each of the factors listed below *should* be in determining your grade in your language arts class?	Not Important (1)		Somewhat Important (2)		Very Important (3)		Mean* (Std Dev)	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
How I do compared to other students in my language arts class	41	44	36	35	22	21	1.81 (0.78)	1.77 (0.77)
My individual improvement or progress over the last grading period	6	6	23	26	71	67	2.65 (0.59)	2.61 (0.61)
How hard I work in class	3	4	17	20	81	76	2.78 (0.47)	2.72 (0.54)
Projects (such as a reported, dramatization or a model)	5	7	22	27	73	67	2.69 (0.55)	2.60 (0.62)
Assignments	3	4	24	28	73	68	2.71 (0.52)	2.64 (0.56)
Tests	3	4	10	16	87	80	2.84 (0.44)	2.75 (0.52)

*Scale Range = 1 (Not Important) to 3 (Very Important)
Numbers in each cell represent percentage of students reporting.

Table 43

Individual Responsible for Grading Criteria in Language Arts Classrooms as Reported by Students

How often do the following statements about grading apply to your language arts class?	Never (1)		Rarely (2)		Sometimes (3)		Often (4)		Always (5)		Mean* (Std Dev)	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
The teacher decides how we will be graded but doesn't share this with students.	23	18	27	27	25	30	12	13	12	12	2.63 (1.30)	2.73 (1.24)
The teacher decides how we will be graded and clearly explains this to students.	9	9	13	13	26	30	26	27	26	21	3.46 (1.25)	3.37 (1.21)
The teacher and students decide together how assignments or projects will be graded.	49	48	20	23	18	18	7	6	6	5	2.01 (1.22)	1.97 (1.16)
The students alone decide how they will be graded.	75	76	10	10	5	9	5	3	4	3	1.53 (1.08)	1.46 (0.95)

*Scale Range = 1 (Never) to 5 (Always)
Numbers in each cell represent percentage of students reporting.

Table 44

Students' Perceptions of Opportunities in Mathematics Classrooms

How often does each of the following events happen in your mathematics class	Never (1)		1-2 times a grading period (2)		1-2 times a month (3)		1-2 times a week (4)		1-2 times a day (5)		Mean* (Std Dev)	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
I listen to the teacher lecture—the teacher talks to the class, gives information.	4	5	8	9	7	6	19	21	62	59	4.29 (1.12)	4.21 (1.18)
I take notes while the teacher lectures.	22	20	9	10	12	16	26	28	30	27	3.33 (1.53)	3.32 (1.46)
I work alone (on drills, practicing skills, reading and answering questions, doing problems).	6	5	7	6	9	8	22	23	57	57	4.19 (1.17)	4.20 (1.16)
I participate in class discussions where the teacher seems interested in new ways of solving problems.	7	10	7	8	9	12	27	29	50	41	4.07 (1.21)	3.83 (1.30)
I work on a group project.	22	29	15	26	28	28	23	12	12	5	2.88 (1.31)	2.37 (1.17)
I work in cooperative learning groups.	23	28	11	15	17	25	29	20	21	12	3.14 (1.45)	2.74 (1.38)
I do hands-on activities in class.	21	23	11	20	18	23	30	19	20	15	3.16 (1.43)	2.83 (1.38)
I have individual conferences with the teacher about my work.	51	43	21	29	12	14	9	9	7	6	2.00 (1.28)	2.07 (1.21)
One student explains subject material or assignments to another student.	25	26	13	13	17	17	25	26	20	18	3.03 (1.48)	2.97 (1.47)
I work on the same assignment as everybody in the class.	2	3	6	6	4	3	8	6	80	83	4.56 (0.98)	4.61 (0.97)
I work alone on an individual contract or independent study.	18	24	8	12	11	10	18	16	45	38	3.64 (1.55)	3.33 (1.63)

*Scale Range = 1 (Never) to 5 (1-2 times a day)

Numbers in each cell represent percentage of students reporting.

Use of preassessment strategies. When asked how their teacher attempted to gather information about what they already knew before beginning a new lesson, students reported that their teachers used example activities and their performance on classroom activities most frequently (Table 45). A majority of students reported that teachers used pretests twice a month or less. Nearly half of students (48%) reported that reviews of mathematics portfolios were never used and 62% of students reported that individual conferences were never used.

Use of classroom accommodations. Students were asked how often particular learning opportunities were offered to them (Table 46). In general, students reported that most of the listed opportunities occurred less than once or twice a grading period. Specifically, the majority of students indicated that they were never allowed to skip an assignment because they already knew the material, never received different assignments or used different materials from other students, were never allowed choices in selecting a project or class work assignment, never worked with mentors, and never had learning centers in their classroom. These responses were similar to the responses provided to the language arts survey. Students reported they had opportunities to work with students who shared similar interests and that the teacher placed students in groups of similar abilities or skill levels more frequently than they reported the occurrences of other learning opportunities.

Engagement in classroom activities. When asked about the instructional activities they engaged in during class, most students reported they were often or always able to keep up with instruction and assignments, and that the teacher taught material so that they could pass the end of chapter tests, or could do well on standardized tests. A large percentage of students also reported that often or always the lessons were based on the textbook. About half of the students reported that they were never given choices about what they learned about or what they did in class. Students also reported that interests rarely were the basis for what they learned or activities they completed (Table 47).

Perceptions about classrooms. When asked the degree to which they agreed with statements concerning challenge, pace and other factors related to learning in their mathematics classroom, students tended to agree or strongly agree that they had to work hard to make a good grade in math, that class was a place where they learned things that were important to them, that they felt they were working to their potential, and that they preferred activities where new, creative, or very different ideas were encouraged, listened to, and discussed (Table 48). Students agreed or strongly agreed that they worked best when it was for a grade, an honor, or a privilege, that they were able to work well independently, and that they showed their best learning when they did a project or when taking a multiple-choice test. Students also indicated that they liked the opportunity to revise and improve their work before the final grade. Students believed there was more to mathematics than getting the right answer, but reported their teachers thought there was a best way to answer a question. They also agreed or strongly agreed with the statement that mathematics has many applications in the everyday life.

Table 45

Students' Reporting of the Use of Pre-Assessment Methods in Mathematics Classrooms

How often does your mathematics teacher use each of these techniques to find out what you already know *before* beginning instruction?	Never (1)		1-2 times a grading period (2)		1-2 times a month (3)		1-2 times a week (4)		1-2 times a day (5)		Mean* (Std Dev)	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Gives me a pre-test.	27	31	14	19	24	26	27	20	8	5	2.74 (1.32)	2.48 (1.24)
Gives me example activities.	9	10	10	8	10	14	30	31	40	37	3.81 (1.31)	3.75 (1.31)
Has an individual conference with me.	62	56	17	22	9	12	8	6	4	4	1.75 (1.16)	1.80 (1.12)
Reviews my mathematics portfolio.	48	59	15	18	13	10	14	7	9	7	2.20 (1.40)	1.84 (1.24)
Looks at my performance on a project I completed.	17	27	16	22	22	22	23	15	22	15	3.17 (1.39)	2.69 (1.39)
Looks at my performance in classroom activities.	8	13	9	11	11	13	31	27	42	36	3.88 (1.27)	3.61 (1.40)

*Scale Range = 1 (Never) to 5 (1-2 times a day)
Numbers in each cell represent percentage of students reporting.

Table 46

Students' Perceptions of Opportunities Provided for Meeting Their Learning Needs in Mathematics Classrooms

How often does each of the following events happen in your mathematics class?	Never (1)		1-2 times a grading period (2)		1-2 times a month (3)		1-2 times a week (4)		1-2 times a day (5)		Mean* (Std Dev)	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
I am allowed to skip an assignment because I already know the material.	91	89	3	5	2	3	2	2	2	2	1.21 (0.74)	1.22 (0.73)
I receive different assignments from the other students in the class.	79	80	8	8	5	6	4	3	4	3	1.46 (1.03)	1.40 (0.94)
I use different materials than other students in the class.	75	78	7	9	7	5	6	4	6	4	1.60 (1.18)	1.47 (1.03)
I work with other students who have interests similar to mine.	32	36	14	17	16	18	19	14	20	15	2.82 (1.54)	2.57 (1.47)
My teacher places me in a group with students who have the same abilities or skill levels as I do.	40	45	13	16	15	15	16	11	17	13	2.59 (1.55)	2.30 (1.46)
I work with mentors who share my particular interests.	55	67	11	9	12	8	13	9	9	7	2.09 (1.41)	1.81 (1.31)
There are learning centers in my classroom that I visit individually or with other students.	76	79	6	7	6	5	6	4	5	5	1.59 (1.17)	1.48 (1.08)
I am given the opportunity to choose a class work assignment.	69	67	12	14	9	10	6	4	5	5	1.65 (1.14)	1.66 (1.12)
I get to choose a project from a list provided by the teacher.	50	56	19	21	17	15	8	3	6	4	2.00 (1.24)	1.78 (1.08)
I can suggest to my teacher a project that I feel demonstrates what I have learned.	46	57	19	19	15	13	10	5	10	7	2.21 (1.38)	1.86 (1.22)
My class uses learning groups.	45	51	12	16	14	16	17	10	13	8	2.40 (1.49)	2.07 (1.31)
Membership in the learning groups in my mathematics class changes.	48	61	16	15	16	12	12	6	9	6	2.18 (1.37)	1.82 (1.22)
I teach mathematics to other students.	58	55	14	16	10	13	10	10	7	7	1.93 (1.31)	1.98 (1.29)

*Scale Range = 1 (Never) to 5 (1-2 times a day)
Numbers in each cell represent percentage of students reporting.

Table 47

Engagement in Instructional Activities Reported by Students in Mathematics Classrooms

Now thinking about yourself and your teacher, how often does each of the following statements apply in this class?	Never (1)		Rarely (2)		Sometimes (3)		Often (4)		Always (5)		Mean* (Std Dev)	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
What I do in class is too difficult.	20	18	40	38	32	35	6	7	2	2	2.31 (0.94)	2.37 (0.92)
What I do in class is too easy.	17	12	27	29	35	36	15	19	7	6	2.69 (1.12)	2.79 (1.05)
I am able to keep up with instruction.	1	1	3	4	13	13	33	35	49	47	4.25 (0.90)	4.22 (0.90)
I am able to keep up with assignments.	1	2	3	4	11	12	28	33	57	50	4.37 (0.88)	4.26 (0.92)
I have choices of what I learn about in class.	53	57	24	23	13	12	4	4	6	5	1.85 (1.16)	1.77 (1.20)
I have choices of what I do in class.	51	49	23	26	14	15	5	4	7	7	1.95 (1.23)	1.92 (1.17)
What I learn about in class is based on my interests.	33	44	30	28	25	20	7	5	5	3	2.21 (1.13)	1.94 (1.05)
Activities I do in class are based on my interests.	33	43	28	30	25	19	9	7	5	3	2.24 (1.16)	1.97 (1.06)
The teacher selects a theme or concept for me to study (such as "conflict" or "tragedy") and what I do in class is related to that theme.	21	29	11	15	24	22	25	19	19	16	3.08 (1.40)	2.79 (1.44)
The teacher teaches material so I can pass the end of unit/chapter tests.	6	6	7	5	15	14	22	24	50	52	4.03 (1.21)	4.11 (1.16)
The teacher teaches materials so I do well on standardized tests.	4	4	5	6	14	14	25	24	51	52	4.15 (1.10)	4.13 (1.12)
The lessons and material the teacher chooses seem to come right from the textbook.	4	5	11	12	31	30	28	25	26	29	3.61 (1.11)	3.61 (1.15)

*Scale Range = 1 (Never) to 5 (Always)
Numbers in each cell represent percentage of students reporting.

Table 48

Students' Perceptions of Their Mathematics Classrooms

We are interested in how well each one of the following statements describes the way you feel about your mathematics class.	Strongly Disagree (1)		Disagree (2)		Agree (3)		Strongly Agree (4)		Mean* (Std Dev)	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
I find the work we do in mathematics to be challenging.	12	13	29	30	46	46	13	12	2.59 (0.86)	2.57 (0.86)
I have to work hard to make good grades in mathematics.	6	8	17	17	39	44	38	31	3.08 (0.89)	2.99 (0.89)
The pace of my mathematics class is too slow for me.	28	26	48	50	16	16	8	8	2.04 (0.86)	2.06 (0.86)
Mathematics class is a place where I learn things that are important to me.	8	10	11	16	42	45	39	30	3.14 (0.89)	2.94 (0.92)
I never learn anything new in mathematics.	53	53	33	35	7	7	6	5	1.67 (0.86)	1.64 (0.82)
I feel as if I am working to my potential in mathematics class.	6	8	15	16	49	48	30	28	3.03 (0.84)	2.96 (0.86)
I prefer learning activities in which information is given to me to be remembered for testing at a later time.	10	11	15	17	44	45	32	27	2.97 (0.93)	2.88 (0.93)
I prefer learning activities in which new, creative or very different ideas are encouraged, listened to and discussed.	4	4	9	9	47	46	40	41	3.22 (0.78)	3.23 (0.78)
Mathematics is easy for me.	11	12	29	29	40	43	21	17	2.71 (0.92)	2.66 (0.90)
I struggle with the basic information and skills my mathematics teacher presents.	34	35	44	44	15	15	7	6	1.95 (0.88)	1.91 (0.86)

*Scale Range = 1 (Strongly Disagree) to 4 (Strongly Agree)
Numbers in each cell represent percentage of students reporting.

Table 48 (continued)

Students' Perceptions of Their Mathematics Classrooms

We are interested in how well each one of the following statements describes the way you feel about your mathematics class.	Strongly Disagree (1)		Disagree (2)		Agree (3)		Strongly Agree (4)		Mean* (Std Dev)	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
I am eager to discuss ideas because I enjoy thinking about and responding to others' ideas.	12	14	21	24	43	43	24	20	2.79 (0.94)	2.68 (0.94)
I work best when I work for a grade, an honor, or a privilege.	6	7	12	13	38	45	43	36	3.19 (0.88)	3.09 (0.86)
I am easily discouraged in mathematics.	29	30	43	41	18	21	10	9	2.09 (0.93)	2.09 (0.92)
I am able to work well independently (without constant teacher attention or frequent direction).	4	5	11	13	52	50	33	33	3.14 (0.77)	3.10 (0.80)
I show my best learning when I do a project.	7	13	19	25	40	38	34	24	3.01 (0.90)	2.72 (0.97)
I show my best learning when I take a multiple-choice test.	6	9	17	22	42	41	35	28	3.06 (0.87)	2.88 (0.92)
I find projects too time-consuming and too hard.	26	22	45	44	18	20	12	14	2.16 (0.94)	2.26 (0.96)
My mathematics teacher is interested in finding out what I know before she/he begins teaching.	10	16	16	21	45	43	29	20	2.92 (0.92)	2.68 (0.97)
I prefer to work with students who have interests in mathematics like mine.	11	10	15	15	44	50	30	25	2.93 (0.94)	2.90 (0.89)
I enjoy doing projects.	14	21	19	26	38	33	29	20	2.82 (1.01)	2.52 (1.04)

*Scale Range = 1 (Strongly Disagree) to 4 (Strongly Agree)
Numbers in each cell represent percentage of students reporting.

Table 48 (continued)

Students' Perceptions of Their Mathematics Classrooms

We are interested in how well each one of the following statements describes the way you feel about your mathematics class.	Strongly Disagree (1)		Disagree (2)		Agree (3)		Strongly Agree (4)		Mean* (Std Dev)	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
I don't know how well I'm doing in mathematics class unless I get a letter or a number grade.	11	12	27	27	36	39	26	23	2.77 (0.96)	2.73 (0.94)
Comments from my teacher are better than letter or number grades.	15	15	27	31	34	34	24	21	2.68 (1.00)	2.60 (0.97)
I like to be given the opportunity to revise and improve my work (such as written assignments, projects) before getting a final grade.	4	5	9	7	39	41	48	47	3.31 (0.80)	3.29 (0.82)
My mathematics teacher thinks there is a best way to answer a question.	8	10	23	23	44	42	25	26	2.87 (0.88)	2.84 (0.92)
Most of the material I learned in mathematics class I have studied before.	9	13	35	39	37	35	20	13	2.68 (0.89)	2.49 (0.88)
There is more to mathematics than getting the right answer.	4	7	12	14	42	45	41	34	3.20 (0.82)	3.06 (0.88)
I liked mathematics when I was younger, but now it's too hard for me.	35	30	40	43	15	18	11	10	2.01 (0.96)	2.08 (0.93)
I think that mathematics has many applications in everyday life.	3	6	9	10	36	41	52	44	3.37 (0.78)	3.22 (0.85)
My mathematics teacher grades fairly.	5	7	6	10	40	43	49	40	3.33 (0.80)	3.15 (0.88)

*Scale Range = 1 (Strongly Disagree) to 4 (Strongly Agree)
Numbers in each cell represent percentage of students reporting.

Factors important in determining grades. When asked the importance of particular factors in determining their grades, students indicated that all the factors were very important with the exception of how well they did compared to other students, which students indicated was either not important or only somewhat important (Table 49).

Responsibility for determining grading criteria. When asked about who determined grading criteria for their mathematics class, a majority of students reported that rarely or never did they and the teacher decide together, or did they alone decide. Instead, the teacher was the sole decision-maker in determining grades (Table 50).

Middle School Science Classrooms

One thousand five hundred twenty-two students (*n*=1,522) completed both the pre-project and post-project surveys.

Classroom opportunities. Students were asked the frequency with which a variety of opportunities were provided in their science classroom (Table 51). The majority of students indicated that on a daily basis they listened to the teacher lecture and worked on the same assignment as other students. Almost half of the students reported working alone on drills daily. Students also reported that they worked on individual contracts, did hands-on activities, and participated in class discussions where the teacher seemed interested in new ways of solving problems at least weekly. However, students also reported rarely having individual conferences with the teacher about their work.

Use of preassessment strategies. When asked how their teacher attempted to gather information about what they already knew prior to starting a lesson, a majority of students reported that their teachers used example activities and their performance on classroom activities at least once a week (Table 52). A majority of students also reported that their teachers never used individual conferences, and that a review of a portfolio occurred twice a grading period or less.

Engagement in classroom activities. Students were asked how often they participated in particular learning opportunities. In general, a majority of students reported that nearly all of the opportunities presented occurred less than once or twice a grading period (Table 53). Specifically, the majority of students indicated that they were never allowed to skip an assignment because they already knew the material, never received different assignments or used different materials from other students, never worked with mentors, never visited learning centers, never taught science to other students, and were never allowed choices in selecting a project or a class work assignment. As in mathematics and language arts, students reported more frequent opportunities to work with other students who had similar interests, to be placed in groups with students of similar abilities and skills, and to work in different learning groups.

Table 49

Students' Perceptions of the Importance of Certain Factors in Determining Grades in Mathematics Classrooms

How important do you think each of the factors listed below *should* be in determining your grade in your mathematics class?	Not Important (1)		Somewhat Important (2)		Very Important (3)		Mean* (Std Dev)	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
How I do compared to other students in my mathematics class	41	42	40	39	19	19	1.78 (0.75)	1.77 (0.75)
My individual improvement or progress over the last grading period	5	6	22	25	73	69	2.68 (0.57)	2.63 (0.60)
How hard I work in class	3	4	16	21	81	75	2.78 (0.48)	2.71 (0.54)
Projects (such as a reported, dramatization or a model)	5	11	29	33	67	56	2.62 (0.57)	2.45 (0.68)
Assignments	2	4	23	27	75	70	2.73 (0.50)	2.66 (0.54)
Tests	2	3	10	16	88	81	2.87 (0.41)	2.78 (0.49)

*Scale Range = 1 (Strongly Disagree) to 4 (Strongly Agree)
Numbers in each cell represent percentage of students reporting.

Table 50

Individual Responsible for Grading Criteria in Mathematics Classrooms as Reported by Students

How often do the following statements about grading apply to your mathematics class?	Never (1)		Rarely (2)		Sometimes (3)		Often (4)		Always (5)		Mean* (Std Dev)	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
The teacher decides how we will be graded but doesn't share this with students.	22	18	24	24	26	30	14	16	15	13	2.76 (1.34)	2.82 (1.26)
The teacher decides how we will be graded and clearly explains this to students.	12	11	14	17	29	29	24	26	23	18	3.32 (1.28)	3.22 (1.24)
The teacher and students decide together how assignments or projects will be graded.	49	51	23	23	17	18	7	4	5	4	1.97 (1.18)	1.88 (1.10)
The students alone decide how they will be graded.	78	77	9	11	6	5	3	4	4	4	1.46 (1.00)	1.47 (1.01)

*Scale Range = 1 (Never) to 5 (Always)
Numbers in each cell represent percentage of students reporting.

Table 51

Students' Perceptions of Opportunities in Science Classrooms

How often does each of the following events happen in your science class?	Never (1)		1-2 times a grading period (2)		1-2 times a month (3)		1-2 times a week (4)		1-2 times a day (5)		Mean* (Std Dev)	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
I listen to the teacher lecture—the teacher talks to the class, gives information.	5	6	9	10	7	7	20	23	59	55	4.19 (1.19)	4.11 (1.24)
I take notes while the teacher lectures.	20	20	10	11	15	15	28	28	26	25	3.30 (1.46)	3.28 (1.46)
I work alone (on drills, practicing skills, reading and answering questions, doing problems).	7	7	7	8	11	11	27	27	49	47	4.03 (1.24)	3.99 (1.24)
I participate in class discussions where the teacher seems interested in new ways of solving problems.	7	11	8	8	9	13	27	31	49	38	4.04 (1.23)	3.78 (1.31)
I work on a group project.	14	12	17	25	29	32	29	21	12	10	3.10 (1.22)	2.91 (1.16)
I work in cooperative learning groups.	15	18	11	14	19	23	33	27	22	17	3.37 (1.34)	3.11 (1.35)
I do hands-on activities in class.	9	9	10	14	21	26	37	31	23	20	3.55 (1.21)	3.38 (1.22)
I have individual conferences with the teacher about my work.	49	46	21	25	14	12	10	10	6	8	2.02 (1.25)	2.09 (1.28)
One student explains subject material or assignments to another student.	28	32	12	17	16	19	24	18	20	15	2.97 (1.51)	2.68 (1.45)
I work on the same assignment as everybody in the class.	3	4	5	5	5	5	10	10	78	76	4.54 (1.00)	4.50 (1.05)
I work alone on an individual contract or independent study.	16	22	10	12	13	11	20	19	41	35	3.59 (1.50)	3.34 (1.58)

*Scale Range = 1 (Never) to 5 (1-2 times a day)

Numbers in each cell represent percentage of students reporting.

Table 52

Students' Reporting of the Use of Pre-Assessment Methods in Science Classrooms

How often does your science teacher use each of these techniques to find out what you already know *before* beginning instruction?	Never (1)		1-2 times a grading period (2)		1-2 times a month (3)		1-2 times a week (4)		1-2 times a day (5)		Mean* (Std Dev)	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Gives me a pre-test.	32	36	14	16	23	22	23	18	8	8	2.61 (1.34)	2.45 (1.34)
Gives me example activities.	12	16	10	9	14	17	33	29	32	29	3.63 (1.33)	3.46 (1.40)
Has an individual conference with me.	59	53	17	21	13	12	8	8	4	6	1.80 (1.15)	1.92 (1.22)
Reviews my science portfolio.	46	46	16	19	14	13	14	13	10	10	2.27 (1.42)	2.22 (1.39)
Looks at my performance on a project I completed.	13	16	17	24	25	24	22	17	22	20	3.22 (1.34)	3.02 (1.35)
Looks at my performance in classroom activities.	9	12	10	11	12	15	26	26	43	36	3.84 (1.32)	3.64 (1.37)

*Scale Range = 1 (Never) to 5 (1-2 times a day)
Number represent percentage of students reporting.

Table 53

Students' Perceptions of Opportunities Provided for Meeting Their Learning Needs in Science Classrooms

How often does each of the following events happen in your science class?	Never (1)		1-2 times a grading period (2)		1-2 times a month (3)		1-2 times a week (4)		1-2 times a day (5)		Mean* (Std Dev)	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
I am allowed to skip an assignment because I already know the material.	89	87	4	6	3	3	1	2	2	3	1.24 (0.79)	1.30 (0.87)
I receive different assignments from the other students in the class.	76	75	8	9	7	7	6	6	3	3	1.50 (1.03)	1.52 (1.05)
I use different materials than other students in the class.	70	73	11	9	7	7	6	6	7	5	1.69 (1.23)	1.61 (1.17)
I work with other students who have interests similar to mine.	28	31	13	17	19	17	20	19	20	17	2.89 (1.50)	2.73 (1.47)
My teacher places me in a group with students who have the same abilities or skill levels as I do.	37	37	14	15	17	17	16	17	17	14	2.62 (1.51)	2.55 (1.46)
I work with mentors who share my particular interests.	54	57	12	11	12	12	13	11	10	9	2.13 (1.43)	2.03 (1.39)
There are learning centers in my classroom that I visit individually or with other students.	69	67	9	10	8	10	9	8	6	6	1.75 (1.26)	1.77 (1.26)
I am given the opportunity to choose a class work assignment.	66	60	13	15	11	11	6	7	5	6	1.71 (1.16)	1.85 (1.25)
I get to choose a project from a list provided by the teacher.	45	40	23	29	19	18	7	6	7	7	2.08 (1.23)	2.11 (1.19)
I can suggest to my teacher a project that I feel demonstrates what I have learned.	42	48	21	20	17	14	9	8	11	10	2.25 (1.36)	2.12 (1.35)
My class uses learning groups.	34	40	14	16	17	18	20	16	16	11	2.69 (1.50)	2.44 (1.42)
Membership in the learning groups in my science class changes.	40	46	18	19	18	15	14	12	10	9	2.35 (1.39)	2.19 (1.36)
I teach science to other students.	65	60	13	15	10	11	7	7	5	7	1.74 (1.19)	1.85 (1.25)

*Scale Range = 1 (Never) to 5 (1 to 2 times a day)
Numbers in each cell represent percentage of students reporting.

Instructional arrangements. When asked about the instructional activities they engaged in during class, a majority of students reported they were always or often able to keep up with instruction and assignments, and that the teacher taught material so that they could pass the end of chapter tests and do well on standardized tests (Table 54). Nearly half of the students indicated their teachers often or always based lessons directly on the textbook. In addition, a majority of students reported that they were never or rarely allowed choices about what they learned or did in class and that what they learned or activities they did were rarely or never based on their interests.

Perceptions about classrooms. When asked the degree to which they agreed with statements concerning learning in their science classroom, a majority of students agreed or strongly agreed that class was a place where the work was challenging, that they had to work hard to make good grades, that they learned things that were important to them, that they felt they were working to their potential, that they preferred learning activities that would aid them in remembering information for later testing times as well as activities where new, creative, or very different ideas were encouraged, listened to, and discussed (Table 55). Students also agreed or strongly agreed that they worked best when it was for a grade, an honor, or a privilege, that they were able to work well independently, that they showed their best learning when they did a project or when they took multiple-choice tests and that they liked the opportunity to revise and improve their work before the final grade. Students indicated there was more to science than getting the right answer, but reported that their teachers thought there was a best way to answer a question. A majority of students also indicated that they disagreed or strongly disagreed with the statement that the pace of their science class was too slow, that they struggled with basic skills or information in science, and that they liked science when they were younger but now it was too hard.

Factors important in determining grades. When asked the importance of particular factors in determining their grades, most students indicated that all the factors should be very important with the exception of how well they did when compared to other students, which was considered by over 40% of the students as not important (Table 56).

Responsibility for determining grading criteria. The final question asked students about who was responsible for determining grading criteria for their science class. The majority of students reported that rarely did students and teachers together determine the criteria for grades and never did students alone decide how they would be graded (Table 57). Instead, students reported that teachers were the main decision-maker, with the majority of students indicating that at least sometimes the grading criteria were clearly explained to them. However, more than 40% reported that the grading criteria were rarely or never shared with them.

Table 54

Engagement in Instructional Activities Reported by Students in Science Classrooms

Now thinking about yourself and your teacher, how often does each of the following statements apply in this class?	Never (1)		Rarely (2)		Sometimes (3)		Often (4)		Always (5)		Mean* (Std Dev)	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
What I do in class is too difficult.	22	24	41	42	30	28	5	4	2	3	2.25 (0.93)	2.19 (0.93)
What I do in class is too easy.	14	13	27	30	37	35	16	15	7	7	2.74 (1.09)	2.72 (1.08)
I am able to keep up with instruction.	2	2	3	4	13	15	32	32	51	47	4.27 (0.90)	4.19 (0.96)
I am able to keep up with assignments.	2	3	3	3	12	14	28	29	56	52	4.33 (0.93)	4.24 (0.98)
I have choices of what I learn about in class.	50	47	22	24	16	17	6	6	6	6	1.95 (1.18)	2.00 (1.20)
I have choices of what I do in class.	47	43	24	24	17	20	5	6	7	7	2.00 (1.21)	2.10 (1.23)
What I learn about in class is based on my interests.	32	36	27	26	27	26	8	7	6	5	2.27 (1.15)	2.19 (1.14)
Activities I do in class are based on my interests.	30	33	27	27	26	28	10	9	7	4	2.37 (1.20)	2.24 (1.12)
The teacher selects a theme or concept for me to study (such as "conflict" or "tragedy") and what I do in class is related to that theme.	18	21	11	12	26	25	24	23	21	18	3.19 (1.37)	3.05 (1.39)
The teacher teaches material so I can pass the end of unit/chapter tests.	6	6	5	6	16	18	23	26	50	44	4.07 (1.17)	3.96 (1.18)
The teacher teaches materials so I do well on standardized tests.	4	5	5	6	15	18	26	26	50	45	4.13 (1.09)	4.00 (1.16)
The lessons and material the teacher chooses seem to come right from the textbook.	8	7	19	14	33	32	22	24	18	23	3.23 (1.17)	3.42 (1.18)

*Scale Range = 1 (Never) to 5 (Always)

Numbers in each cell represent percentage of students reporting.

Table 55

Students' Perceptions of Their Science Classroom

We are interested in how well each one of the following statements describes the way you feel about your science class.	Strongly Disagree (1)		Disagree (2)		Agree (3)		Strongly Agree (4)		Mean* (Std Dev)	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
I find the work we do in science to be challenging.	12	14	34	34	43	42	10	9	2.51 (0.84)	2.46 (0.85)
I have to work hard to make good grades in science.	7	9	21	19	37	44	35	28	3.01 (0.92)	2.90 (0.91)
The pace of my science class is too slow for me.	24	22	51	53	16	18	9	8	2.10 (0.87)	2.13 (0.84)
Science class is a place where I learn things that are important to me.	6	10	14	16	47	48	32	26	3.05 (0.85)	2.91 (0.90)
I never learn anything new in science.	51	44	36	39	8	10	6	8	1.69 (0.85)	1.82 (0.90)
I feel as if I am working to my potential in science class.	7	7	16	18	46	46	31	29	3.01 (0.86)	2.98 (0.86)
I prefer learning activities in which information is given to me to be remembered for testing at a later time.	12	12	14	19	43	40	32	29	2.95 (0.96)	2.86 (0.96)
I prefer learning activities in which new, creative or very different ideas are encouraged, listened to and discussed.	4	6	7	11	44	45	46	39	3.29 (0.78)	3.17 (0.84)
Science is easy for me.	9	10	31	28	42	43	19	19	2.70 (0.87)	2.71 (0.89)
I struggle with the basic information and skills my science teacher presents.	33	33	43	43	15	16	9	8	1.99 (0.92)	1.99 (0.90)

*Scale Range = 1 (Strongly Disagree) to 4 (Strongly Agree)
Numbers in each cell represent percentage of students reporting.

Table 55 (continued)

Students' Perceptions of Their Science Classroom

We are interested in how well each one of the following statements describes the way you feel about your science class.	Strongly Disagree (1)		Disagree (2)		Agree (3)		Strongly Agree (4)		Mean* (Std Dev)	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
I am eager to discuss ideas because I enjoy thinking about and responding to others' ideas.	10	14	20	20	46	43	24	23	2.83 (0.91)	2.74 (0.97)
I work best when I work for a grade, an honor, or a privilege.	7	9	12	13	40	41	41	37	3.15 (0.89)	3.06 (0.93)
I am easily discouraged in science.	31	31	46	43	15	18	9	8	2.02 (0.89)	2.03 (0.90)
I am able to work well independently (without constant teacher attention or frequent direction).	4	5	11	11	49	50	36	34	3.18 (0.77)	3.12 (0.81)
I show my best learning when I do a project.	7	11	18	22	41	37	35	30	3.03 (0.90)	2.86 (0.97)
I show my best learning when I take a multiple-choice test.	8	9	15	20	40	39	37	32	3.06 (0.91)	2.94 (0.93)
I find projects too time-consuming and too hard.	26	23	45	40	18	23	12	14	2.16 (0.94)	2.29 (0.97)
My science teacher is interested in finding out what I know before she/he begins teaching.	11	17	16	20	49	44	24	20	2.85 (0.91)	2.67 (0.97)
I prefer to work with students who have interests in science like mine.	9	9	15	14	44	48	32	29	3.00 (0.91)	2.98 (0.88)
I enjoy doing projects.	12	17	19	22	37	37	32	24	2.90 (0.98)	2.69 (1.02)
I don't know how well I'm doing in science class unless I get a letter or a number grade.	11	11	27	27	37	38	25	24	2.75 (0.96)	2.75 (0.94)

*Scale Range = 1 (Strongly Disagree) to 4 (Strongly Agree)
Numbers in each cell represent percentage of students reporting.

Table 55 (continued)

Students' Perceptions of Their Science Classroom

We are interested in how well each one of the following statements describes the way you feel about your science class.	Strongly Disagree (1)		Disagree (2)		Agree (3)		Strongly Agree (4)		Mean* (Std Dev)	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Comments from my teacher are better than letter or number grades.	14	16	28	30	32	33	27	21	2.72 (1.01)	2.60 (1.00)
I like to be given the opportunity to revise and improve my work (such as written assignments, projects) before getting a final grade.	4	5	8	9	38	40	50	46	3.34 (0.80)	3.28 (0.82)
My science teacher thinks there is a best way to answer a question.	10	11	22	27	40	39	29	24	2.88 (0.94)	2.76 (0.94)
Most of the material I learned in science class I have studied before.	9	2	41	44	35	31	15	13	2.56 (0.85)	2.45 (0.87)
There is more to science than getting the right answer.	5	9	8	13	43	45	43	33	3.24 (0.82)	3.04 (0.90)
I liked science when I was younger, but now it's too hard for me.	35	30	42	43	13	16	10	11	1.98 (0.93)	2.07 (0.95)
I think that science has many applications in everyday life.	6	8	12	16	43	44	39	33	3.15 (0.86)	3.02 (0.91)
My science teacher grades fairly.	5	7	9	11	39	42	48	40	3.29 (0.83)	3.16 (0.88)

*Scale Range = 1 (Strongly Disagree) to 4 (Strongly Agree)
Numbers in each cell represent percentage of students reporting.

Table 56

Students' Perceptions of the Importance of Certain Factors in Determining Grades in Science Classrooms

How important do you think each of the factors listed below *should* be in determining your grade in your science class?	Not Important (1)		Somewhat Important (2)		Very Important (3)		Mean* (Std Dev)	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
How I do compared to other students in my science class	41	44	39	34	21	22	1.80 (0.76)	1.79 (0.78)
My individual improvement or progress over the last grading period	5	7	21	25	74	68	2.69 (0.56)	2.62 (0.61)
How hard I work in class	4	6	16	20	81	74	2.77 (0.50)	2.68 (0.58)
Projects (such as a reports, dramatization or a model)	3	6	24	27	74	67	2.71 (0.52)	2.61 (0.60)
Assignments	2	4	25	28	73	68	2.71 (0.50)	2.64 (0.56)
Tests	2	4	10	15	88	81	2.86 (0.40)	2.77 (0.51)

*Scale = 1 (Not Important) to 3 (Very Important)
Numbers in each cell represent percentage of students reporting.

Table 57

Individual Responsible for Grading Criteria in Science Classrooms as Reported by Students

How often do the following statements about grading apply to your science class?	Never (1)		Rarely (2)		Sometimes (3)		Often (4)		Always (5)		Mean* (Std Dev)	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
The teacher decides how we will be graded but doesn't share this with students.	21	19	25	24	26	30	14	13	13	14	2.72 (1.31)	2.79 (1.28)
The teacher decides how we will be graded and clearly explains this to students.	11	12	13	15	27	29	26	26	23	19	3.38 (1.27)	3.25 (1.25)
The teacher and students decide together how assignments or projects will be graded.	46	49	25	20	17	18	7	7	6	6	2.03 (1.21)	1.99 (1.20)
The students alone decide how they will be graded.	76	75	10	9	6	8	5	5	4	3	1.51 (1.05)	1.53 (1.04)

*Scale Range = 1 (Never) to 5 (Always)
Numbers in each cell represent percentage of students reporting.

Middle School Social Studies Classrooms

One thousand four hundred thirty-six students (*n*=1,436) completed both the pre- and post- surveys.

Classroom opportunities. Students were asked the frequency with which they were provided a variety of opportunities in their social studies classroom (Table 58). The majority of students indicated that listening to the teacher lecture, and working on the same assignment as other students occurred on a daily basis while working alone (on drills, etc.) occurred weekly. Students reported that they listened to the teacher lecture, worked on individual contracts, and participated in class discussions where the teacher seemed interested in new ways of solving problems at least weekly. Students also reported rarely having individual conferences with the teacher about their work.

Use of preassessment strategies. When asked how their teacher attempted to gather information about what they already knew prior to starting a new lesson, the majority of students reported that their teachers used example activities and their performance on classroom activities at least once a week (Table 59). According to the majority of students, review of social studies portfolios and individual conferences were used twice a grading period or less.

Instructional arrangements. When presented with a list of possible ways teachers might adapt instruction to meet student learning needs, the majority of students reported that nearly all of the opportunities occurred less than once or twice a grading period (Table 60). Specifically, the majority of students indicated that they were never allowed to skip an assignment because they already knew the material, never received different assignments or used different materials from other students, never worked with mentors, never worked in learning centers, never taught other students, and were never allowed choices in selecting a project or class work assignment.

Engagement in classroom activities. When asked about the level of challenge, choices, the environment, and instructional activities in their class, the majority of students reported that they were always able to keep up with instruction and assignments. The majority of students also reported that the teacher taught often or always material so that they could pass the end of chapter tests and do well on standardized tests (Table 61). Approximately half of the students reported the lessons were often or always based on the textbook. The majority of students also reported rarely or never being allowed choices about what they learned or did in class. Students also indicated that what they learned or activities they did were rarely or never based on their interests.

Table 58

Students' Perceptions of Opportunities in Social Studies Classrooms

How often does each of the following events happen in your social studies class?	Never (1)		1-2 times a grading period (2)		1-2 times a month (3)		1-2 times a week (4)		1-2 times a day (5)		Mean* (Std Dev)	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
I listen to the teacher lecture—the teacher talks to the class, gives information.	5	5	7	8	8	7	19	21	61	58	4.24 (1.17)	4.18 (1.20)
I take notes while the teacher lectures.	19	20	10	10	15	16	30	32	27	22	3.36 (1.44)	3.26 (1.43)
I work alone (on drills, practicing skills, reading and answering questions, doing problems).	7	7	6	8	10	10	25	27	52	48	4.10 (1.21)	4.01 (1.23)
I participate in class discussions where the teacher seems interested in new ways of solving problems.	7	9	7	8	10	12	25	27	50	45	4.04 (1.24)	3.90 (1.30)
I work on a group project.	16	14	20	28	31	35	22	17	11	7	2.93 (1.22)	2.75 (1.10)
I work in cooperative learning groups.	18	22	12	15	21	24	28	25	20	15	3.19 (1.38)	2.94 (1.37)
I do hands-on activities in class.	19	21	16	20	20	21	25	25	20	14	3.10 (1.40)	2.90 (1.35)
I have individual conferences with the teacher about my work.	53	48	20	25	11	14	10	8	7	5	1.98 (1.29)	1.99 (1.19)
One student explains subject material or assignments to another student.	36	39	11	15	14	17	22	17	17	12	2.74 (1.55)	2.47 (1.44)
I work on the same assignment as everybody in the class.	2	4	5	4	5	6	9	11	79	75	4.57 (0.96)	4.50 (1.03)
I work alone on an individual contract or independent study.	16	23	8	12	11	13	21	19	45	34	3.70 (1.49)	3.29 (1.58)

*Scale Range = 1 (Never) to 5 (1-2 times a day)

Numbers in each cell represent percentage of students reporting.

Table 59

Students' Reporting of the Use of Pre-Assessment Methods in Social Studies Classrooms

How often does your social studies teacher use each of these techniques to find out what you already know *before* beginning instruction?	Never (1)		1-2 times a grading period (2)		1-2 times a month (3)		1-2 times a week (4)		1-2 times a day (5)		Mean* (Std Dev)	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Gives me a pre-test.	33	38	13	18	23	20	23	17	7	7	2.57 (1.34)	2.39 (1.33)
Gives me example activities.	13	19	10	9	15	16	30	30	32	26	3.59 (1.37)	3.33 (1.44)
Has an individual conference with me.	62	55	17	22	10	12	7	8	4	4	1.73 (1.12)	1.84 (1.15)
Reviews my social studies portfolio.	48	50	16	18	13	13	15	10	9	9	2.22 (1.41)	2.09 (1.35)
Looks at my performance on a project I completed.	14	15	17	23	27	30	20	15	22	17	3.19 (1.33)	2.95 (1.30)
Looks at my performance in classroom activities.	10	12	9	11	12	14	28	26	40	36	3.79 (1.33)	3.62 (1.39)

*Scale Range = 1 (Never) to 5 (1-2 times a day)
Numbers in each cell represent percentage of students reporting.

Table 60

Students' Perceptions of Opportunities Provided for Meeting Their Learning Needs in Social Studies Classrooms

How often does each of the following events happen in your social studies class?	Never (1)		1-2 times a grading period (2)		1-2 times a month (3)		1-2 times a week (4)		1-2 times a day (5)		Mean* (Std Dev)	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
I am allowed to skip an assignment because I already know the material.	91	88	4	4	2	4	1	2	2	3	1.21 (0.73)	1.29 (0.86)
I receive different assignments from the other students in the class.	79	74	7	10	6	8	5	4	3	4	1.46 (1.02)	1.55 (1.06)
I use different materials than other students in the class.	72	73	10	9	8	8	5	6	5	4	1.61 (1.15)	1.58 (1.12)
I work with other students who have interests similar to mine.	31	33	15	18	16	19	20	16	18	14	2.80 (1.51)	2.61 (1.44)
My teacher places me in a group with students who have the same abilities or skill levels as I do.	38	37	13	17	18	20	14	13	18	12	2.62 (1.53)	2.46 (1.41)
I work with mentors who share my particular interests.	56	57	10	11	12	14	12	10	10	9	2.09 (1.43)	2.04 (1.39)
There are learning centers in my classroom that I visit individually or with other students.	70	71	9	10	8	8	8	7	6	5	1.70 (1.23)	1.65 (1.17)
I am given the opportunity to choose a class work assignment.	65	56	13	17	11	13	7	8	6	6	1.76 (1.21)	1.92 (1.25)
I get to choose a project from a list provided by the teacher.	43	38	19	30	24	20	8	6	6	6	2.17 (1.24)	2.12 (1.15)
I can suggest to my teacher a project that I feel demonstrates what I have learned.	46	49	18	19	16	14	11	9	10	9	2.22 (1.39)	2.09 (1.33)
My class uses learning groups.	41	44	13	16	16	16	18	14	12	10	2.47 (1.46)	2.30 (1.41)
Membership in the learning groups in my social studies class changes.	44	48	17	17	17	15	13	10	9	9	2.25 (1.37)	2.15 (1.36)
I teach social studies to other students.	69	61	11	16	8	10	6	7	6	6	1.69 (1.21)	1.80 (1.21)

*Scale Range = 1 (Never) to 5 (1-2 times a day)
Numbers in each cell represent percentage of students reporting.

Table 61

Engagement in Instructional Activities Reported by Students in Social Studies Classrooms

Now thinking about yourself and your teacher, how often does each of the following statements apply in this class?	Never (1)		Rarely (2)		Sometimes (3)		Often (4)		Always (5)		Mean* (Std Dev)	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
What I do in class is too difficult.	26	28	40	41	28	25	4	4	1	2	2.15 (0.90)	2.12 (0.94)
What I do in class is too easy.	15	14	27	26	33	34	17	18	7	8	2.74 (1.13)	2.78 (1.13)
I am able to keep up with instruction.	1	2	4	4	12	11	29	31	54	52	4.32 (0.91)	4.26 (0.96)
I am able to keep up with assignments.	2	2	2	4	10	12	28	30	58	52	4.38 (0.90)	4.26 (0.95)
I have choices of what I learn about in class.	51	47	23	22	15	17	4	7	7	6	1.93 (1.20)	2.03 (1.22)
I have choices of what I do in class.	49	43	21	24	17	19	5	8	8	7	2.01 (1.24)	2.12 (1.24)
What I learn about in class is based on my interests.	34	37	26	26	28	24	6	8	6	5	2.23 (1.15)	2.19 (1.16)
Activities I do in class are based on my interests.	31	36	27	24	28	26	9	9	6	5	2.32 (1.17)	2.24 (1.17)
The teacher selects a theme or concept for me to study (such as "conflict" or "tragedy") and what I do in class is related to that theme.	15	18	13	12	24	27	26	23	23	21	3.29 (1.34)	3.17 (1.36)
The teacher teaches material so I can pass the end of unit/chapter tests.	6	5	7	7	15	15	23	26	49	47	4.01 (1.22)	4.04 (1.16)
The teacher teaches materials so I do well on standardized tests.	4	5	5	7	16	16	25	24	50	49	4.11 (1.11)	4.04 (1.17)
The lessons and material the teacher chooses seem to come right from the textbook.	6	9	14	14	29	29	25	23	26	26	3.50 (1.20)	3.44 (1.23)

*Scale Range = 1 (Never) to 5 (Always)
Numbers in each cell represent percentage of students reporting.

Perceptions about classrooms. When asked the degree to which they agreed with statements concerning their learning in their social studies classroom, students tended to agree that class was a place where they learned things that were important to them, that they worked hard to make good grades, that they felt they were working to their potential, that they preferred learning activities that would aid them in remembering information for later testing times as well as activities in which new, creative, or very different ideas were encouraged, listened to, and discussed (Table 62). Students also agreed they worked best when it was for a grade, an honor, or a privilege, they were able to work well independently, they showed their best learning when they did a project or when they took multiple-choice tests, and they liked the opportunity to revise and improve their work before the final grade. Students indicated there was more to social studies than getting the right answer and that social studies has many applications in real life. They also felt grading was fair in the social studies classrooms. The students in the social studies classrooms were less likely than the other content areas to report their social studies teacher believed that there was a best right answer.

Factors important in determining grades. When asked the importance of particular factors in determining their grades, the majority of students indicated all the factors should be very important with the exception of how well they did when compared to other students (Table 63).

Responsibility for determining grading criteria. The final question asked of students pertained to who was responsible for determining the grading criteria in their social studies class. The majority of students reported they rarely or never decided on grading together with the teacher and they never decided alone how they would be graded (Table 64). Instead, the teacher was the main decision-maker, with the majority of students indicating at least sometimes the grading criteria were clearly explained to them.

Teachers' Summary

Student responses to many of the questions were similar regardless of subject area considered. Teachers' responses sometimes confirmed and sometimes differed from the pattern of responses of the students (Table 65 and 66).

The majority of students in all classrooms reported listening to the teacher lecture, working alone on drills, and working on the same assignment as other students daily. In addition, students reported working alone on individual contracts and participating in class discussions where the teacher seemed interested in new ways of solving problems at least weekly. The majority of students also reported never having individual conferences with the teachers.

Table 62

Students' Perceptions of Their Social Studies Classroom

We are interested in how well each one of the following statements describes the way you feel about your social studies class.	Strongly Disagree (1)		Disagree (2)		Agree (3)		Strongly Agree (4)		Mean* (Std Dev)	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
I find the work we do in social studies to be challenging.	15	16	35	38	41	37	9	10	2.44 (0.86)	2.40 (0.87)
I have to work hard to make good grades in social studies.	8	10	21	22	41	42	30	26	2.93 (0.91)	2.85 (0.92)
The pace of my social studies class is too slow for me.	21	21	53	52	16	18	10	9	2.15 (0.87)	2.14 (0.85)
Social studies class is a place where I learn things that are important to me.	10	9	15	17	46	46	30	28	2.97 (0.91)	2.93 (0.90)
I never learn anything new in social studies.	45	42	38	42	10	9	6	7	1.77 (0.87)	1.81 (0.86)
I feel as if I am working to my potential in social studies class.	6	6	17	17	45	50	31	26	3.01 (0.86)	2.96 (0.83)
I prefer learning activities in which information is given to me to be remembered for testing at a later time.	9	12	16	17	44	39	32	32	2.99 (0.91)	2.91 (0.98)
I prefer learning activities in which new, creative or very different ideas are encouraged, listened to and discussed.	4	5	9	11	42	43	45	42	3.29 (0.78)	3.20 (0.83)
Social studies is easy for me.	10	10	31	27	39	41	19	21	2.68 (0.90)	2.73 (0.91)
I struggle with the basic information and skills my social studies teacher presents.	37	36	42	41	15	15	7	8	1.92 (0.89)	1.95 (0.91)
I am eager to discuss ideas because I enjoy thinking about and responding to others' ideas.	11	12	20	21	44	40	25	27	2.82 (0.93)	2.82 (0.97)

*Scale Range = 1 (Strongly Disagree) to 4 (Strongly Agree)
Numbers in each cell represent percentage of students reporting.

Table 62 (continued)

Students' Perceptions of Their Social Studies Classroom

We are interested in how well each one of the following statements describes the way you feel about your social studies class.	Strongly Disagree (1)		Disagree (2)		Agree (3)		Strongly Agree (4)		Mean* (Std Dev)	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
I work best when I work for a grade, an honor, or a privilege.	7	9	11	10	39	41	43	39	3.18 (0.89)	3.12 (0.92)
I am easily discouraged in social studies.	33	34	43	42	16	15	8	8	1.98 (0.90)	1.98 (0.91)
I am able to work well independently (without constant teacher attention or frequent direction).	5	4	8	9	49	50	38	37	3.20 (0.79)	3.20 (0.77)
I show my best learning when I do a project.	7	10	21	22	37	37	36	32	3.03 (0.91)	2.90 (0.96)
I show my best learning when I take a multiple-choice test.	7	9	16	20	40	40	37	32	3.07 (0.89)	2.94 (0.93)
I find projects too time-consuming and too hard.	27	23	43	39	19	23	12	15	2.15 (0.94)	2.30 (0.99)
My social studies teacher is interested in finding out what I know before she/he begins teaching.	13	14	18	20	46	43	23	23	2.89 (0.94)	2.75 (0.97)
I prefer to work with students who have interests in social studies like mine.	9	8	15	15	46	47	31	30	2.98 (0.90)	2.98 (0.88)
I enjoy doing projects.	12	16	19	22	38	36	31	26	2.87 (0.99)	2.71 (1.03)
I don't know how well I'm doing in social studies class unless I get a letter or a number grade.	12	11	27	26	37	39	24	24	2.73 (0.96)	2.76 (0.94)

*Scale Range = 1 (Strongly Disagree) to 4 (Strongly Agree)
Numbers in each cell represent percentage of students reporting.

Table 62 (continued)

Students' Perceptions of Their Social Studies Classroom

We are interested in how well each one of the following statements describes the way you feel about your social studies class.	Strongly Disagree (1)		Disagree (2)		Agree (3)		Strongly Agree (4)		Mean* (Std Dev)	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Comments from my teacher are better than letter or number grades.	15	15	28	28	33	32	24	26	2.66 (1.00)	2.69 (1.01)
I like to be given the opportunity to revise and improve my work (such as written assignments, projects) before getting a final grade.	4	4	8	9	39	39	49	48	3.32 (0.80)	3.32 (0.79)
My social studies teacher thinks there is a best way to answer a question.	10	14	26	26	38	36	26	25	2.80 (0.94)	2.72 (0.98)
Most of the material I learned in social studies class I have studied before.	9	14	43	43	33	30	16	13	2.55 (0.86)	2.43 (0.89)
There is more to social studies than getting the right answer.	6	6	10	13	47	45	38	36	3.17 (0.82)	3.12 (0.85)
I liked social studies when I was younger, but now it's too hard for me.	33	31	46	46	11	14	10	9	1.97 (0.91)	2.02 (0.91)
I think that social studies has many applications in everyday life.	7	10	18	20	44	42	31	29	2.99 (0.88)	2.91 (0.94)
My social studies teacher grades fairly.	6	7	8	8	41	39	46	47	3.27 (0.83)	3.26 (0.86)

*Scale Range = 1 (Strongly Disagree) to 4 (Strongly Agree)
Numbers in each cell represent percentage of students reporting.

Table 63

Students' Perceptions of the Importance of Certain Factors in Determining Grades in Social Studies Classrooms

How important do you think each of the factors listed below *should* be in determining your grade in your social studies class?	Not Important (1)		Somewhat Important (2)		Very Important (3)		Mean* (Std Dev)	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
How I do compared to other students in my social studies class	42	42	37	36	21	22	1.80 (0.78)	1.80 (0.78)
My individual improvement or progress over the last grading period	6	7	24	26	70	68	2.64 (0.60)	2.61 (0.61)
How hard I work in class	3	3	17	21	81	76	2.78 (0.48)	2.72 (0.52)
Projects (such as a reported, dramatization or a model)	4	6	23	26	73	69	2.70 (0.54)	2.63 (0.59)
Assignments	2	3	24	27	74	70	2.72 (0.51)	2.66 (0.54)
Tests	2	4	10	16	88	80	2.85 (0.43)	2.77 (0.50)

*Scale = 1 (Not Important) to 3 (Very Important)
Numbers in each cell represent percentage of students reporting.

Table 64

Individual Responsible for Grading Criteria in Social Studies Classrooms as Reported by Students

How often do the following statements about grading apply to your social studies class?	Never (1)		Rarely (2)		Sometimes (3)		Often (4)		Always (5)		Mean* (Std Dev)	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
The teacher decides how we will be graded but doesn't share this with students.	22	21	25	27	27	25	13	14	13	13	2.70 (1.31)	2.73 (1.30)
The teacher decides how we will be graded and clearly explains this to students.	11	11	13	14	28	28	24	26	24	21	3.35 (1.29)	3.32 (1.27)
The teacher and students decide together how assignments or projects will be graded.	50	48	20	20	19	20	6	7	6	5	2.00 (1.22)	2.03 (1.20)
The students alone decide how they will be graded.	77	73	9	11	6	9	4	4	4	4	1.48 (1.04)	1.54 (1.04)

*Scale Range = 1 (Never) to 5 (Always)
Numbers in each cell represent percentage of students reporting.

Table 65

Middle School Classrooms: Teachers' Practices and Similar Students' Perceptions of Those Practices as Reported by the Majority of Teachers and Students

Teachers' reported practices	Student perceptions
Never use learning centers in their classrooms	Never visit learning centers in classrooms individually or with other students
Varied instructional materials for the same lesson or in a given unit of study. • Less than twice a year with advanced learners • Monthly with struggling learners	Never use different materials than other students in the class
Use of student choices about content, process, and/or product used twice a year or less	Never given the opportunity to. . . • choose a class work assignment • choose a project from a list provided by the teacher • suggest to my teacher a project that I feel demonstrates what I have learned • make choices of what I learn about in class • make choices of what I do in class
Weekly use of cooperative learning strategies	On a weekly basis, • I work in cooperative learning groups. • My class uses learning groups.
• Never use interest centers/groups (a learning center based on student interest) • Never use flexible grouping based on student interest	Never allowed to work with other students who have interests similar to mine
Never use adults as mentors	Never work with mentors who share their interests
• At least monthly adjustment of the length of assignment according to student needs • At least weekly adjustment of depth of content according to student needs	• I work on the same assignment as everybody in the class on a daily basis • I never receive different assignments from the other students in the class
Lecture, direct instruction, and/or discussion with the class as a whole used on a daily basis	• Daily the teacher lectures • Daily note-taking occurs while the teacher lectures

Table 65 (continued)

Middle School Classrooms: Teachers' Practices and Similar Students' Perceptions of Those Practices as Reported by the Majority of Teachers and Students

Teachers' reported practices	Student perceptions
PREASSESSMENT • Monthly use of a pre-test • Weekly use of example activities • Rarely have individual conferences • Portfolios never used • At least weekly observation of student responses and discussion	**PREASSESSMENT** • Monthly use of pre-test • Weekly gives me example activities • Never has an individual conference • Never reviews my portfolio • Daily looks at my performance in classroom activities
Textbooks important in determining the content taught	• The lessons and material the teacher chooses seem to come right from the textbook • The teacher always teaches material so I can pass the end of unit/chapter tests
Individual achievement relative to the rest of the class somewhat important when grading	How I do compared to other students in my class is only somewhat important
Individual improvement/progress over last grading period is important when grading	My individual improvement or progress over the last grading period is very important
Student effort is extremely important when grading	How hard I work in class is very important in determining my grade
How often are criteria for grades in your classroom determined by the following factors? • The teacher - often • Students - sometimes • Teacher and students together - sometimes	How often do the following statements about grading apply to your ___ class? • The teacher *sometimes* decides how we will be graded but doesn't share this with students • Teacher and students together *never* determine how assignments or projects will be graded • The students alone *never* decide how they will be graded

Table 66

Middle School Classrooms: Teachers' Practices and Dissimilar Students' Perceptions of Those Practices as Reported by the Majority of Teachers and Students

Teachers' reported practices	Student perceptions
Learning contracts are never used	At least weekly I work alone on an individual contract or independent study
Use peers as tutors used at least weekly	I never teach other students
Weekly the whole group works on the same seat work	I work on the same assignment as everybody in the class daily.
At least monthly use of individual students working on independent assignments	• I work on the same assignment as everybody in the class on a daily basis • I never receive different assignments from the other students in the class • At least weekly I work alone on an individual contract or independent study
At least monthly observation of student performance on project or product as a preassessment strategy	At least weekly the teacher looks at performance on project I completed as a preassessment strategy
Student questions/interests are important in determining the content they teach	• I *never* have choices of what I learn about in class • I *never* have choices of what I do in class • What I learn about in class is based on my interests only *sometimes* • Activities I do in class are based on my interests only *sometimes*

Teachers' responses also reflected the student responses regarding typical instructional practice in all subject area classrooms. The majority of teachers reported using learning contracts less than once per year and using independent studies only twice a year or less. Teachers also indicated using lecture, whole group and small heterogeneous groups working on the same assignment at least weekly, while individuals and small heterogeneous groups working on different assignments and small homogeneous groups working on the same assignment were used less often.

Students from all areas reported that teachers used example activities and performance on classroom activities to assess what they already knew prior to instruction at least weekly. However, the majority of students reported that they were never allowed to skip an assignment because they already knew the material, never received different materials or assignments from other students, and were never allowed choices in

selecting a project or class work. Teachers agreed with students on the type of pre-assessment strategies used and the frequency of their use. Teachers also reported they never or rarely used student choices with advanced learners or struggling learners. However, teachers indicated they used varying materials based on students reading level, and adjusted the time, length, or depth of the assignment at least monthly for both groups of learners.

Students in all areas reported they were often or always able to keep up with the instruction and assignments. The majority of students reported the teacher often or always taught material so they could pass the end of chapter tests, and nearly half of the students reported lessons were often or always based directly on the textbook. Additionally, students indicated rarely or never were their interests considered in what they learned or activities they did, nor were they allowed choices about what they learn. Teachers agreed that the textbook was frequently used, however, in contrast to student responses, teachers believed students' interests were addressed. The majority of teachers indicated textbooks and student questions and interests were important or extremely important in determining the content they taught.

Most students agreed or strongly agreed they worked well independently; worked best for a grade, an honor, or a privilege; showed their best learning when they did a project or took multiple choice tests. In addition, students agreed or strongly agreed they preferred learning activities that would aid them in remembering information for later testing times, as well as activities where new, creative or very different ideas are encouraged, listened to, and discussed. Students in all content areas agreed or strongly agreed they were learning things that were important to them, they were working to their potential, and they preferred to work with students who shared similar interests. Furthermore, students agreed or strongly agreed they liked the opportunity to revise their work before the final grade, there was more to a subject than getting the right answer, but the teacher tended to think that there was a best way to answer a question. Teacher responses suggested there was not a match between the student's preferred learning style and the teaching style. In contrast to student preferences, teachers indicated rarely or never using flexible grouping based on student interest with advanced learners, and only sometimes with struggling learners. Teachers reported using projects to assess student achievement twice a month or less. Teachers also reported inconsistent use of multiple choice items, with 50% indicating using these items sometimes to never, while the other 50% used multiple choice items often or always.

The majority of students reported that the teacher was often or always the decision maker when it came to grades. However, a large percentage of students indicated the teacher in some instances clearly explained the grading criteria. Students from all areas indicated tests, assignments, projects, hard work, and individual improvement were all very important in determining their grade. In addition, students reported how they did compared to other students was not important. Teacher responses on grading issues tended to agree with the student responses. The majority of teachers reported themselves sole decision maker when it came to grades. Teachers also indicated tests, projects, homework, class participation and individual improvement were all

important or extremely important in determining grades. However, teachers reported effort was extremely important, while how the student did compared to the rest of the class was only somewhat important.

Discussion

The survey yielded large amounts of data concerning teachers' beliefs and practices prior to the implementation of the project's interventions as well as students' perceptions of their classrooms prior to and after implementation of treatments. The results provide a glimpse into what change agent's face when entering what appear to be typical middle school classrooms.

While the survey used for the intervention project was based on the national survey conducted in 1995, there were modifications to the survey that dealt specifically with the interventions of the feasibility of high-end learning study. This section will compare this project's middle school teachers' responses with the results obtained in the earlier NRC/GT study looking at academic diversity as well as other interesting and unique findings concerning teachers' classroom practices for the intervention study.

As in the earlier study, "positive" beliefs and practices are considered to be those that: (a) reflect an awareness of and sensitivity to differences in students' academic profiles; (b) demonstrate modifications in curriculum and instruction responsive to student differences in readiness, interest, and/or learning profiles; and (c) enhance the likelihood of curriculum and instruction responsive to academically diverse middle learners (Moon et al., 1995).

Conversely, beliefs and practices are considered negative if they (a) reflect lack of awareness of or sensitivity to differences in students' academic profiles; (b) are indicative of one-size-fits-all instruction in which most/all students are expected to complete the same learning tasks, presented in the same way, and over the same time span; and (c) diminish the likelihood of curriculum and instruction responsive to academically diverse middle school learners (Moon et al., 1995).

Comparison With the 1995 Study Findings

There appear to be several areas in which the current study's findings replicate what was previously found in the 1995 NRC/GT study. Consistent with the 1995 study findings, teachers report that learning contracts, tiered assignments, advanced organizers, computer programs focusing on basic skills or advanced understanding, curriculum compacting, learning centers, flexible grouping, or interest centers are rarely used in their middle school classrooms. Teachers in the current study also indicate that these options are not used with either advanced learners or struggling learners.

In contrast to the 1995 study findings, state curriculum standards, local curriculum guides, and key concepts and principles of core disciplines are considered the

three most important factors in determining instructional content taught by teachers. Previously, the 1995 study findings indicated state programs as having little influence on the delivery of instructional content. Instead focusing on complex open-ended questions and student questions and choices were the most important factors in determining content, with state curriculum standards and testing programs regarded as least important. Perhaps the findings of the current study reflect more of the national level initiatives focused on high academic standards and state tests that assess these standards.

In the 1995 study findings, teachers indicated that remedial learners had the most influence on their instructional decision-making, followed by gifted learners, special education learners, and culturally diverse learners. For this study, findings indicate that teachers consider the whole class as a single unit first, followed by average learners, learners with disabilities, gifted learners, and remedial learners, with culturally diverse learners rarely receiving consideration in making instructional decisions.

Unique Findings From the Current Study

Because of the nature of the interventions being implemented several areas were investigated with participating middle schools that were not considered in the 1995 national study. This section of the monograph will provide highlights from these unique areas.

The majority of teachers report using example activities and observations to modify the content of activities, types of products required of students, and student grouping arrangements; yet a large portion of teachers also indicate never tailoring an assignment for students or varying materials based on student readiness levels. Instead, lecture, direct instruction to the whole class using the state standards and local curriculum guides, is the predominant reported modality of teaching (46% daily; 98% at least weekly).

Teachers also indicate that lack of planning time, concerns about classroom management, and the range of student academic diversity are factors that hinder them in differentiating instruction. Lack of planning time and availability of assessment materials are factors a large portion of teachers considers as hindrances in implementing authentic assessments. State and district mandates are considered neither hindering nor helpful in differentiating instruction or implementing authentic assessments.

Students' Perceptions of Their Classrooms

In agreement with the teachers' responses, students indicated that more informal methods of pre-assessment (e.g., example activities, observations) rather than formal methods (e.g., pre-tests, individual conferences) were used as common pre-assessment techniques. Students also indicated, consistent with teachers' responses, that the instructional content of their classes was textbook driven and focused on student success for more formal assessments (e.g., end-of-unit tests, standardized tests). Students also indicated whole group instruction supported by note taking and all students working on

the same assignment as the predominant format of their classrooms. As one student aptly put it in the larger study when being interviewed about typical days:

> You sit down and everybody is talking to each other until the bell rings. When the bell rings, he [teacher] shuts the door and you have to be quiet. He tells us what we are going to do for the rest of the day or the rest of the period. He gives us, like say, the lesson plan and then he gives us the worksheet and we do that and turn it in. If we are watching a movie it's all quiet and he makes us take notes on the movie and he always puts things up on the overhead and everybody is quiet and we have to copy what is on the overhead down on a sheet of paper. Other than that, it's pretty much the same: worksheets and copying notes. (Student interview, Y3, #3, p. 5)

Conclusions

Although this study provides only a glimpse into teachers' classrooms, several conclusions seem warranted.

- There appears to be room for improvement in developing teachers' skills in addressing academic diversity in middle school classrooms.
- Teachers' make little use of strategies (instructional or structural) that would enable the academic diversity of students to be better addressed.
- The influence of accountability through curriculum standards and testing programs appears to negatively effect teachers' willingness to or ability to acknowledge and address the academic diversity of middle school learners.

The degree that teachers' practices are narrow in scope at the pre-assessment, formative and summative phases of instruction have a strong hold and are persuasive in the school environment which may in fact be one of the biggest obstacles in moving teachers toward addressing academic diversity. Results from this study suggest that teachers practice traditional schooling that should be questioned and re-examined prior to them being able to consider an educational innovation such as differentiation of instruction and/or the use of differentiated authentic assessments for addressing the varying levels of student academic diversity in the middle school classroom. However, with the current emphasis on student achievement and the endorsement of differentiation in *Turning Points 2000: Educating Adolescents in the 21st Century* (Jackson & Davis, 2000), it is possible that middle schools will begin to make significant curricular modifications to address diversity in the classroom.

References

Ames, N. L. (1998). *Middle-grades curriculum, instruction, and assessment*. Paper presented for the Office of Educational Research and Improvement on Early Adolescence, Washington, DC.

Argetsinger, A. (1999, April 28). Maryland panel rethinks middle schools. *Washington Post,* p. B1.

Beane, J. A. (1999). Middle schools under siege: Points of attack. *Middle School Journal, 30*(4), 3-9.

Beane, J. A. (2001). Reform and reinvention. In T. S. Dickenson (Ed.), *Reinventing the middle school* (pp. xiiv-xxii). New York: RoutledgeFalmer.

Brandt, R. (1998). *Powerful learning*. Alexandria, VA: Association for Supervision and Curriculum Development.

Callahan, C. M., Tomlinson, C. A., Moon, T. R., Brighton, C. M., & Hertberg, H. L. (in preparation). *Feasibility of high-end learning in the diverse middle school.*

Callahan, C. M., Tomlinson, C. A., Reis, S. N., & Kaplan, S. N. (2000). TIMSS and high ability students: Message of doom or opportunity for reflection? *Phi Delta Kappan, 81*, 787-790.

Carnegie Council on Adolescent Development. (1989). *Turning points: Preparing American youth for the 21st century* (Abridged Version). Washington, DC: Author.

Clark, D. C., & Clark, S. N. (2000). Developmentally responsive curriculum and standards-based reform: Implications for middle level principals. *NASSP Bulletin, 84*(615), 1-13.

Clark, S., & Clark, D. (1993). Middle level school reform: The rhetoric and the reality. *Elementary School Journal, 93*, 447-460.

Council of Chief State School Officers. (2000). *State student assessment programs annual survey, Spring 2001*. Washington, DC: Author.

Dickenson, T. S. (2001). *Reinventing the middle school*. New York: RoutledgeFalmer.

Erickson, H. L. (1998). *Concept-based curriculum and instruction: Teaching beyond the facts*. Thousand Oaks, CA: Corwin.

Felner, R., Jackson, A. W., Kasak, D., Mulhall, P., Brand, S., & Flowers, N. (1997). The impact of school reform for the middle years. *Phi Delta Kappan, 78*, 528-32, 541-50.

Gallagher, J., Harradine, C. C., & Coleman, M. R. (1997). Challenge or boredom? Gifted students' views on their schooling. *Roeper Review, 19*, 132-136.

George, P. S. (2001). The evolution of middle schools. *Educational Leadership, 58*(4), 40-44.

Goldsmith, L. T., & Kantrov, I. (2000). Evaluating middle grades curricula for high standards of learning and performance. *NASSP Bulletin, 84*(615), 30-39.

Jackson, A. W., & Davis, G. A. (2000). *Turning points 2000: Educating adolescents in the 21st century*. New York: Teachers College Press.

Kulik, J. A., & Kulik, C. C. (1997). Ability grouping. In N. Colangelo & G. A. Davis (Eds), *Handbook of gifted education* (pp. 54-66). Boston: Allyn and Bacon.

Lando, B. Z., & Schneider, B. H. (1997). Intellectual contributions and mutual support among developmentally advanced children in homogeneous and heterogeneous work/discussion groups. *Gifted Child Quarterly, 41*, 44-57.

Lee, V. E., Smith, J. B., Perry, T. E., & Smylie, M. A. (1999). *Social support, academic press, and student achievement: A view from the middle grades in Chicago. Improving Chicago's schools. A report of the Chicago Annenberg research project*. Chicago: Consortium on Chicago School Research.

Lipsitz, J., Jackson, A. W., & Austin, L. M. (1997). What works on middle-grades school reform. *Phi Delta Kappan, 78*, 517-19.

Lipsitz, J., Mizell, M. H., Jackson, A. W., & Austin, L. M. (1997). Speaking with one voice: A manifesto for middle-grades reform. *Phi Delta Kappan, 78*, 533-540.

Maker, C. J., & Nielson, A. B. (1995). *Curriculum development and teaching strategies for gifted learners* (2nd ed.). Austin, TX: Pro-Ed.

Manning, M. L. (2000). Child-centered middle schools: A position paper. *Association for Childhood Education International, 76*, 154-59.

McEwin, K., Dickinson, T., & Jenkins, D. (1996). *America's middle schools: Practices and progress. A 25-year perspective*. Columbus, OH: National Middle School Association.

Midgley, C., & Edelin, K. C. (1998). Middle school reform and early adolescent well-being: The good news and the bad. *Educational Psychologist, 33*, 195-206.

Moon. T., Tomlinson, C. A., & Callahan, C. M. (1995). *Academic diversity in the middle school: Results of a national survey of middle school administrators and teachers*. (Research Monograph 95124). Storrs, CT: The National Research Center on the Gifted and Talented, University of Connecticut.

National Middle School Association. (1995). *This we believe: Developmentally responsive middle schools*. Westerville, OH: Author.

Peterson, D. W. (2001, January). *On the road: In search of excellence in middle level education*. Paper presented at the Annual Winter Workshop of the Minnesota Association of Secondary School Principals, Minneapolis, MN.

Plucker, J. A., & McIntire, J. (1996). Academic survivability in high-potential, middle school students. *Gifted Child Quarterly, 40*, 7-14.

Rogers, K. B. (1998). Using current research to make "good" decisions about grouping. *NASSP Bulletin, 82*(595), 38-46.

Sapon-Shevin, M. (1996). Beyond gifted education: Building a shared agenda for school reform. *Journal for the Education of the Gifted, 19*, 194-213.

Stix, A. (2000). Bridging standards across the curriculum with portfolios. *Middle School Journal, 32*(1), 15-25.

Tomlinson, C. A. (1994). Gifted learners: The boomerang kids of middle school? *Roeper Review, 16*, 177-182.

Tomlinson, C. A. (2001). *How to differentiate instruction in mixed-ability classrooms*, (2nd ed.). Alexandria, VA: Association for Supervision and Curriculum Development.

Tucker, M. S., & Codding, J. B. (1998). *Standards for our schools: How to set them, measure them, and reach them*. San Francisco: Jossey-Bass Publishers.

VanTassel-Baska, J. (2000). Curriculum policy development for secondary gifted programs: A prescription for reform coherence. *NASSP Bulletin, 84*(615), 14-29.

Westberg, K. L., Archambault, F. X., Dobyns, S. M., Salvin, T. J. (1993). The classroom practices observation study. *Journal for the Education of the Gifted, 16*, 120-146.

Wiggins, G., & McTighe, J. (1998). *Understanding by design*. Alexandria, VA: Association for Supervision and Curriculum Development.

Williamson, R. D., Johnston, J. H., & Kanthak, L. M. (1995). Agenda: The achievement agenda for middle level schools. *Schools in the Middle, 5*(2), 6-9.

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