Scheduling and Learning Time: Introduction

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Center on Instruction

A recent report from the National Center on Time and Learning (NCTL) demonstrates a correlation between increased learning time and boosts in middle school and high school achievement. While the report shows positive trends, researchers acknowledge the exploratory nature of the data and emphasize the need for more definitive research in this area (Gewertz, 2009). Other research supports the effectiveness of well-designed programs that expand learning time by a minimum of 300 hours per school year (see Frazier & Morrison, 1998). However, extending learning time into before- and after-school hours can be difficult to implement effectively due to the complexity of integrating "extra" instruction with existing academic instruction during the school day (see James-Burdumy, Dynarski, & Deke, 2007).

Increased learning time, defined as increasing the length of the school day, week, or year schedule to significantly increase the total number of school hours devoted to academic and enrichment activities, is an area of high interest as states, districts, and schools strive to raise students' achievement. Many states and districts have considered various ways to increase the amount of time available to students for learning activities, including restructuring and extending the school day (and altering the school year structure), and providing full-day kindergarten and preschool programs. Schools and teachers have, for example, implemented block scheduling, reduced time spent in elective classes to create guided study halls that give students additional support, increased time spent in core academic classes, and reduced transition times both between and within classes.

Unfortunately, just increasing the amount of instructional time is not enough to achieve sufficient learning gains. Instruction provided during allocated time must be at an appropriate level and delivered in a way that is effective, efficient, meaningful, and motivating. Ultimately, the success of altering the school day to increase learning time will depend on how well teachers are trained to use the extra time.

The quality of instruction (including instructional time provided before and after school) can be enhanced by strategies that increase student time-on-task and engagement and by mastery learning techniques. Both of these strategy sets are similar in intent, and both provide students with instruction at appropriate levels, use assessment data to inform instruction, and differentiate instruction to increase student achievement. Coupling increased instructional time with quality instruction will help students become more active and motivated, with the potential to achieve greater learning gains.

Finally, adequate and structured instructional planning time is another component of developing and delivering quality instruction. Shared planning time for teams of teachers is useful for collaboratively analyzing student data, planning instruction, coordinating lesson plans, and working through common curricular "problem spots." This time can also be used to provide grade level, subject, or interdisciplinary team professional development.

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Restructuring and Extending the School Day

National High School Center

Schools, districts, and states are struggling to improve education and increase student learning and achievement. Some reform ideas have focused on increasing the time students spend in school and reorganizing school schedules. Currently, the 180 six-hour-day schedule used in most schools is not based on the needs and learning styles of students, but rather on a 19th-century agrarian system (Farbman & Kaplan, 2005). Many states and districts have considered ways to change the outdated way that time is spent in school by (1) transforming school day schedules; (2) extending the school day; and (3) altering the school year structure. Ultimately, though, these reforms must not focus on simply extending the time students are in school, but on increasing the time students engage in productive, academic learning (Silva, 2005).

Transforming Time Structure During the School Day

One strategy that schools are using to increase instructional time spent on core subjects such as reading and mathematics is block scheduling. Typically, block scheduling divides the school day into four periods of 80-100 minutes, and alternates subject matter by day or semester. As a result, students are engaged in learning for longer periods of time. Block scheduling has been effective in San Diego's Blueprint for Student Success program, where double and triple length reading classes boosted student achievement enough to narrow school achievement gaps by about 15% over two years (Public Policy Institute of California, 2005). However, the success of block scheduling depends on how well teachers are trained to use the extra time effectively. Some schools also use block scheduling for a "double dosing" of core subjects. Students may attend core classes for longer time periods than their other classes during the day in order to improve achievement (Kennelly & Monrad, 2007).

Other strategies that schools have used to increase academic achievement are to reduce time students spend in elective classes and to create guided study halls where students can receive additional support from instructors. Student advisories, where students meet with teachers to discuss schoolwork or more general concerns, can also replace study halls. The advisory period gives teachers time to develop relationships with students thereby helping to increase student engagement in school which is a vital part of student success (Pennington, 2006).

Extending the School Day

A study of high-performing high schools in Massachusetts found that all the top performing schools had expanded school days (The Rennie Center for Education Research and Policy, 2003). The most important aspect of extending the school day is to ensure that the extra time is spent in academic endeavors which engage students. Some strategies that schools have used are lengthening the time students spend in core academic classes, implementing transition programs or credit recovery classes, creating community partnerships in which students participate in internships or online or web-based classes, and offering after-school or supplemental education services (SES) for students.

For low-income or minority students, Title I SES can be particularly helpful. Poor and minority students are less likely than their more affluent peers to have education resources and learning experiences outside of school (Silva, 2007). SES, when implemented over extended periods of time and frequently monitored and evaluated, can provide opportunities to close the achievement gap between these students and their wealthier peers. SES can focus on building core academic skills, perhaps language acquisition for English language learners or credit recovery classes, areas for which there is not enough allotted time during the school day.

Extending/Altering the School Year

Research suggests that low-income students experience significant learning loss over the summer months, compared with children from higher income families who have access to travel, camps, and other enrichment activities (Pennington, 2006). Year-round schools may help to reduce the negative effects of summer learning loss; however, the structure must increase total school hours and not simply reorganize the traditional school year length over a 12-month period (Silva, 2007). Summer programs help engage students in unique ways, such

as through internships or leadership programs. The Knowledge is Power Program (KIPP) schools have reported increased academic achievement among their predominantly minority and urban students, using a lengthened school year and a mandatory 3-4 week summer school session (Pennington, 2006). Furthermore, many summer programs focus on helping to ease the transition from middle to high school, a critical time for students. Finally, a few high schools have employed "J terms," a January or June term lasting approximately three weeks. The most common areas of focus for J term courses are academic recovery, multi-disciplinary projects, internships, or a combination of academic and multi-disciplinary classes. These activities are beneficial to all students, particularly low income and minority students.

Action Principles

For State

1. Help districts build capacity to address various aspects of extended learning time including: enlisting support from teachers' unions; providing funding for extended learning time initiatives; developing resources for professional development on the effective use of additional or newly structured learning time; and monitoring extended learning time initiatives.

For District

1. Create buy-in for extended school days from parents, teachers, students, and the community.

2. Allocate and increase funds to support extended learning time.

3. Provide professional development to ensure that teachers use extra time effectively.

4. Create local partnerships with businesses, organizations, etc., to support the extended time initiative.

5. Determine how the district will monitor progress of the extended learning time initiative.

For School

1. Implement professional development to aid teachers in using extra school time effectively.

2. Determine how to restructure the school day so that the students who need the most support are given more instructional opportunities.

3. Create a plan for monitoring the progress of the extended learning time initiatives as well as for continuous improvement.

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Providing Full-Day Kindergarten

Center on Instruction

Over the past ten years, consensus has developed on the educational value of full-day kindergarten, especially for young children who are economically disadvantaged or have other at-risk characteristics; for those children, the additional time in kindergarten contributes to early prevention of the achievement gap. Research syntheses that compare half-day to full-day kindergarten show no negative effects for full-day kindergarten and typically support positive effects for academic learning, specifically early reading skills (although it is not clear that those effects are sustained through the primary grades). In the U.S. Department of Education's landmark Early Childhood Longitudinal Study (ECLS), kindergarten children in full-day classes had higher reading and mathematics achievement by the end of the kindergarten year compared with those in half-day classes. Studies have also shown that full-day kindergarten reduces the need for remediation and results in fewer grade retentions. Full-day kindergarten seems to promote social and behavioral adjustment to school. Children with the full-day experience do better with the transition to first grade, demonstrate significant gains in socialization and higher behavioral outcomes, and have better attendance in kindergarten and the primary grades.

Full-day kindergarten offers the opportunity for extended time devoted to academic learning as well as social interaction and development. For example, the ECLS study found that children in full-day classes were much more likely to spend more than an hour per day on literacy (68% of full-day classes vs. 37% of half-day classes) and to spend time every day (and more than half an hour per day) on mathematics (81% of full-day classes vs. 52% of half-day classes). Researchers have found that full-day programs are more likely to include individualized and small-group work as well as more child-initiated activities. Some researchers have theorized that, in offering extended and individualized contact with children, full-day kindergarten teachers are more likely to detect learning and developmental needs earlier and arrange for appropriate interventions.

Action Principles

For State

1. Consider reallocation of existing funds to provide financial support for districts to provide full-day kindergarten (especially for disadvantaged children) to help with the additional staffing and space costs incurred by districts.

2. Consider reallocation of existing funds to provide financial support to help full-day kindergarten programs operate quality programs. For example, the additional time of an extended day may require new curricular materials and staff training to use the time for targeted student skill development.

3. Provide model kindergarten standards and assessments that are appropriate for the full-day kindergarten experience as well as recommended criteria for selecting curriculum.

4. Offer professional development for kindergarten teachers to enable them to make productive use of the longer day with developmentally appropriate, challenging, and engaging activities.

5. Set certification standards for kindergarten teachers that require qualifications consistent with national standards.

For District/School

1. Conduct periodic quality reviews of kindergarten classrooms to ensure that the full day is used appropriately and use the results of those reviews to provide feedback to classroom staff.

2. Provide expert coaching for kindergarten teachers, especially to help teachers move from half-day curriculum to a full-day curriculum.

3. Provide kindergarten staffing models that facilitate individualized and small group opportunities to ensure that the additional full-day kindergarten schedule is providing the type of instructional support that makes a difference in student outcomes.

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Providing Preschool Programs

Center on Instruction

Over the past three decades, evidence about the benefits of quality preschool education has mounted (Barnett, 2008; Snow, Burns, & Griffin, 1998; Schweinhart, 2001) and, increasingly, making preschool universally available has become a goal of state and local governments. Now more than 80% of four-year olds attend some type of preschool with about half of those enrolled in a publicly supported pre-K program; participation by three-year olds is much more limited because, to date, the growth of public programs has focused largely on education for four-year olds (Barnett et al., 2008). The outcomes associated with high-quality preschool experiences include academic and social success in kindergarten, first grade, and beyond; several landmark longitudinal studies even demonstrate the lasting effects of high-quality preschool on disadvantaged children's opportunities for academic achievement, social adjustment, and well-being (Schweinhart et al, 2005; Barnett, 1996; Ramey & Campbell, 1994; Campbell & Ramey, 1994).

Of course, the educational benefits of preschool accrue only when the preschool experiences are of high quality. Unfortunately, past studies have shown that the majority of preschool programs in the United States do not reach the necessary level of quality (Cost, Quality and Outcomes Study Team, 1995), and that is especially true of those programs serving the at-risk child population. Quality characteristics that make a difference include: positive warm relationships between adults and children, regular communication between adults and children, and adults encouraging children to explore, reason, and solve problems. Other characteristics of high-quality programs include a curriculum that teaches skills associated with future academic success, including the opportunity to learn readiness skills; variety in schedule and offerings; small group sizes; credentialed teachers; appropriate adult-child ratios; a well-equipped and spacious environment; and ongoing professional development and supervision (Strickland & Riley-Ayers, 2006). The recent report of the National Early Learning Panel offers educators and policymakers more detailed information about the early skills that are important for later literacy success (National Early Literacy Panel, 2008).

Action Principles

For State

1. Reallocate existing funds to provide financial incentives for districts/schools/community providers to offer preschool education or extend the time of services through longer days or more days per week.

2. Reallocate existing funds to support costs that enable at-risk children to participate in preschool, including reimbursing transportation costs, which are often a barrier.

3. Provide financial incentives for districts/schools/community providers to provide preschool education for children younger than age four.

4. Strengthen preschool standards to include appropriate child-teacher ratios that allow for individualized attention, appropriate screening and assessments, and educational goals.

5. Provide incentives for preschool programs that have demonstrated quality practices.

6. Set certification standards for preschool teachers that require qualifications consistent with national standards.

For District/School

1. Arrange for quality reviews of preschool classrooms to provide feedback for teachers, including expert supervision and coaching for preschool teachers.

2. Include preschool teachers in routine professional development events as well as specialized professional development.

3. Select a research-based curriculum that includes literacy and language skill development.

4. Provide education for parents of at-risk children designed to encourage their children's participation in preschool.

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Providing Adequate and Structured Teacher Instructional Planning Time

Center on Instruction

Common planning time for grade level, subject, or interdisciplinary teams has increasingly been considered a crucial part of school improvement. Research suggests that sufficient, scheduled planning time is essential for these teams to be effective (Flowers, Mertens, & Mullhall, 1999). Collaborative teams, in which teachers share planning time and a common group of students, have been correlated with better school culture, more effective parent communication, higher student achievement, and increased teacher motivation and job satisfaction (Kassissieh & Barton, 2009; Flowers et al., 1999; Little, 1982; Jackson & Davis, 2000; Piccucci, Brownson, Kahlert, & Sobel, 2002). There is good reason to believe that joint planning time is also critical for building the type of professional learning community that schools aspire to achieve.

Generally, common planning time can provide opportunities for teachers to collaboratively discuss and resolve curricular issues, coordinate lesson plans, and locate common "problem spots" (i.e., areas in the grade level curriculum that tend to cause problems). This time can also be used to generate high-quality explanations of terms in mathematics and science that are difficult to explain, to determine key academic language necessary for success in that grade's curricula, and to generate useful examples for lessons in reading comprehension, vocabulary, literary analysis, math problem solving, and others. Some structured planning time for teams can also be used to provide grade-level, subject, or interdisciplinary team professional development.

Action Principles

For District

1. Ensure adequate teacher planning time in district schedules by adding school days, adjusting the length of the school day, modifying the early release/late start schedule, or using a block schedule (Finding Time for Training and Collaboration, 2003).

2. Allocate resources to support planning times for teachers and teams (Miles & Frank, 2008).

3. Provide professional development to support collaboration and teaming. This may entail a format for grade level teams or content-area teams (at the secondary level) to use in group meetings (Herman, Dawson, Dee, Greene, Maynard, Redding, & Darwin, 2008).

4. Develop tools to help teacher teams productively discuss curricula, instruction, and student progress (Oxley, 2007).

5. Set expectations for routine teacher collaboration, analysis, evaluation, and experimentation (Little, 1982).

6. Restructure budgets so that funds are provided for teacher planning time.

For School

1. Establish clear expectations for the work products developed during planning time (Kassissieh & Barton, 2009; Prager, 1992).

2. Prepare agendas for team planning time so that time is used efficiently (Kassissieh & Barton, 2009; Prager, 1992).

3. Organize the instructional schedule to include sustained time for team collaboration (Mclaughlin & Talbert, 1993, Kassissieh & Barton, 2009; Prager, 1992). All teachers at each grade level should have one common planning time a week.

4. Utilize other teachers, the principal, aides, or parent volunteers to free teachers to participate in team meetings (Prager, 1992).

5. Create a weekly schedule for planning time that specifies the purpose for each period, that is, to plan individually, with their grade level colleagues, and in subject or interdisciplinary teams (Prager, 1992).

6. Offer relevant professional development for grade level, subject, or interdisciplinary teams. Consider asking teams to identify areas of need based on results of annual assessment data. Use these areas of weakness to choose professional development that will be relevant to the team (Herman, Dawson, Dee, Greene, Maynard, Redding, & Darwin, 2008; Little, 1982).

7. Include teacher leaders in organizing planning time, expectations, and professional development (Little, 1982).

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Increasing Time-on-Task and Student Engagement

Center on Instruction/National High School Center

Time-on-task refers to the amount of time students spend attending to school-related tasks (Prater, 1992), such as following directions and engaging in learning activities. Time-on-task is also sometimes referred to as "engaged time." Studies indicate that up to 50% of the school day is spent on non-instructional activities in general and special education classrooms (Good, 1983; Thurlow et al., 1983), leaving ample room for improvement in the area of time management. While there is some relationship between time-on-task (or engaged time) and student achievement, simply increasing the amount of time available for instruction is not enough to achieve learning gains. Time allocated for instruction must be appropriate; that is, at the appropriate instructional level for students and delivered in a way that is effective, efficient, meaningful, and motivating to students. It is important to keep in mind that most studies have measured *allocated time* (time students are required to be in class), and only a small number of studies have attempted to measure *engaged time* (time students participate in learning activities) and *academic learning time* (time when true learning occurs) (Aronson, Zimmerman, & Carlos, 1998). However, findings from those studies tend to support a moderate relationship between engaged time and achievement and an even larger relationship between academic learning time and achievement (see Cotton & Wikelund, 1990).

Action Principles

For State

1. Enhance teacher understanding and use of strategies designed to increase student time-on-task by providing high-quality professional development concentrated on features of effective instruction, instructional management, and classroom management. Though research is inconclusive about the most effective ways to increase instructional time within the classroom, most researchers agree that improving teachers' time management techniques is a good starting point (Hossler et al., 1988).

2. Embed specific information on time-on-task, student engagement, and academic learning time within teacher preparation programs at institutions of higher education.

For District

1. Reinforce and extend professional development provided by the SEA. This can be done through instructional coaches who work directly with teachers, model strategies taught during professional development sessions, and offer frequent feedback to teachers.

For School

1. Improve time management, increase the proportion of time spent on academic subjects, and adopt alternative academic calendars to maximize the amount of time available for student learning (Aronson, Zimmerman, & Carlos, 1998).

2. Actively engage students in learning at appropriate levels of difficulty throughout the day (Aronson, Zimmerman, & Carlos, 1998; Fisher, 2009; Prater, 1992). This applies to independent seatwork in particular, which consumes much of the academic time in classrooms, especially at the higher grade levels (Rock & Thread, 2009).

3. Monitor student performance through formative and summative assessment and use student data to inform instructional decision-making and ensure appropriate levels of instruction (Aronson, Zimmerman, & Carlos, 1998).

4. Differentiate instruction by using various grouping formats, modifying assignments, allowing students to respond in multiple ways, and using other effective instructional strategies such as reteaching and providing examples.

5. Utilize classroom and behavior management strategies that reduce transition times between activities and disruptions during instructional time (Prater, 1992).

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Applying Mastery Learning Techniques

Center on Instruction

Mastery learning uses differentiated and individualized instruction, progress monitoring, formative assessment, feedback, corrective procedures, and instructional alignment to minimize achievement gaps (Bloom, 1971; Zimmerman & Dibenedetto, 2008). The strategy is based on Benjamin Bloom's *Learning for Mastery* model, which emphasizes differentiated instructional practices as strategies to increase student achievement. Drawing from the principles of effective tutoring practices and learning strategies, mastery learning uses feedback, corrective procedures, and classroom assessment to inform instruction. Rather than focusing on changing content, this strategy endeavors to improve the process of mastering it.

In a mastery learning classroom, teachers follow a scope and sequence of concepts and skills in instructional units. Following initial instruction, teachers administer a brief formative assessment based on the unit's learning goals. The assessment gives students information, or feedback, which helps identify what they have learned well to that point (diagnostic) and what they need to learn better (prescriptive). Students who have learned the concepts continue their learning experience with enrichment activities, such as special projects or reports, academic games, or problem-solving tasks. Students who need more experience with the concept receive feedback paired with corrective activities, which offer guidance and direction on how to remedy their learning challenge. To be effective, these corrective activities must be qualitatively different from the initial instruction by offering effective instructional approaches and additional time to learn. Furthermore, learning goals or standards must be aligned with instruction (or opportunities to practice), corrective feedback, and evaluation.

Research on mastery learning across grade bands has shown positive cognitive and effective learning outcomes in students in general, including learners considered at risk of academic failure (Guskey & Gates, 1986). Most empirical research on this strategy was conducted over two decades ago; however, its founding principles have guided more recent effective instructional and measurement practices. Most of its components, such as the use of feedback, correction, and differentiated instruction, are well documented key tools in the education of students with special needs and English language learners. Results of observations in mastery learning classrooms have shown increased student achievement, retention of learned material, involvement in learning activities, and positive student affect (attitude and demeanor). In addition, the successful use of mastery learning has positive effects on teachers as well, as their expectations for student achievement improve.

Action Principles

For State

1. Define learning goals or standards that are aligned to instructional units across content areas.

2. Collaborate with institutions of Higher Education to include information about mastery learning strategies in teacher preparation programs.

For District

1. Offer professional development events for teachers and administrators to enhance their capacity on how to implement the mastery learning strategies effectively (Guskey & Pigott, 1988).

2. Identify and provide access to research-based formative assessment tools to guide instruction for students who have learning difficulties.

For School

1. Deliver instruction through large and small group-based instructional techniques combined with progress monitoring and formative assessment. The results of assessment will guide development and delivery of individualized enrichment experiences for those who master the concepts and differentiated corrective learning for those who still need additional experience.

2. Provide opportunities for teams of teachers to plan and prepare procedures and materials to use for feedback, correctives, enrichment, and instructional alignment.

3. Combine teacher expertise and resources to enhance the classroom environment and collaboration (Guskey, 2007).

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