Optimal Scheduling for Secondary School Students

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In the following report, Hanover Research presents findings from available literature about the characteristics, advantages, and disadvantages of various secondary school scheduling models. The report concludes with a discussion about how to implement a different scheduling model based on identified best practices and an illustrative profile of one school district's transition to a block scheduling model.

HANOVER RESEARCH

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EXECUTIVE SUMMARY

In this report, Hanover Research examines available literature to highlight secondary school scheduling models that optimize learning and instruction, as well as meeting other student and district priorities. The report also discusses best practices for implementing a new scheduling model.

KEY FINDINGS

- **Existing research has not identified a correlation between secondary scheduling models and student achievement**. Although block schedules tend to reduce student attendance and behavioral problems slightly over traditional period schedules, teachers and administrators report some scheduling difficulties and time constraints regardless of the model used.
- **Block schedules appear to offer a slightly higher degree of flexibility than traditional schedules**. Other advantages include greater ease accommodating the needs of remedial and accelerated students from a scheduling perspective, the ability to offer more courses per year, and increased opportunities for teachers to use a variety of instructional techniques.
- **The increased scheduling flexibility of block schedules, however, must be balanced with well-planned curriculum**. Although block schedules increase the amount of time a student spends in a particular class per day or week, they often decrease the amount of time spent in a class over the whole year, essentially trading aggregate instructional time for scheduling flexibility. Administrators and teachers must, then, collaborate when implementing a new schedule to ensure that the curriculum adaptation accords with district goals and priorities.
- **Scheduling appears to have a negligible long term effect on achievement, and the best approach to evaluating scheduling models involves building consensus around district priorities**. Change management and new schedule implementation literature suggests that, for best results, districts define clear priorities and goals and then evaluate which model is most conducive to reaching them in the opinion of most stakeholders. Consensus can be built through honest and open discussion of the goals and models in consideration, clear communication throughout the implementation process, and the provision of appropriate and sustained development opportunities.
- **Instructors teaching in block schedules should use different teaching methods to make the best use of the additional time**. The literature recommends employing a diversity of teaching approaches—potentially including group work, in-class activities, and discussion, among others—and intentionally structuring the class into a progression of focused segments, such as time for instruction, application, and then review.

SECTION I: SCHEDULING MODEL CHARACTERISTICS

In this section, Hanover Research presents the findings of literature that evaluates various scheduling models for middle and high school education, focusing in particular on recently published research and literature.

SCHEDULING MODELS AND THEIR CHARACTERISTICS

Secondary education scheduling typically follows one of two types of models, either the traditional, or period, schedule or some variation of a block schedule. Block schedules offer class periods that usually last 90 minutes or more, with class subjects offered on alternating days or alternating semesters or trimesters.[1] There are a few different, specific block scheduling models that are commonly implemented in schools, each with its own advantages and disadvantages. The Center for Public Education (CPE), an initiative of the National School Boards Association that serves as a resource on education topics, provides descriptions of four commonly implemented block scheduling models: the 4x4 block, the alternating, or A/B, plan, the trimester plan, and the 75-75-30 plan.[2]

Although variations on all of these models exist, these models currently represent the most common scheduling models in secondary education. To establish a basic level of familiarity and to establish comparisons between scheduling models, the characteristics of each of these models are discussed briefly below.

TRADITIONAL OR PERIOD SCHEDULE

Under a traditional schedule, students take six, seven, or eight periods a day throughout the entire school year. Typically, each of these periods lasts between 45 and 55 minutes with approximately five minutes for moving between classes built into the daily schedule. Students receive full credit for each of the classes they complete at the end of the school year. In this model, students spend approximately 225 minutes per week in a particular class. [3]

4X4 OR SEMESTER BLOCK SCHEDULE

The 4x4 block schedule divides the school year into two semesters. Students take half of their eight courses during the first semester and the other half during the second semester. Under a 4x4 block schedule, instructional time for each course is generally between 85 and 100 minutes per day, allowing students to theoretically accomplish in one semester what

[1] "Making time: What research says about reorganizing school schedules." The Center for Public Education. 2006. http://www.centerforpubliceducation.org/Main-Menu/Organizing-a-school/Copy-of-Making-time-At-a-glance/Making-time-What-research-says-about-re-organizing-school-schedules.html
[2] Ibid.
[3] "Advantages and Disadvantages of the Block Schedule." The North Carolina Public School System. p. 7. http://www.ncpublicschools.org/docs/curriculum/worldlanguages/resources/flonblock/06advantage.pdf

would take them a whole year under a traditional schedule. Figure 1.1 compares course time under a 4x4 schedule with course time under a traditional schedule.[4]

Figure 1.1: Period and 4x4 Block Scheduling Comparison

Traditional Schedule (Daily Schedule, Year-Long)	4x4 Schedule (Semester 1)	4x4 Schedule (Semester 2)
Period 1	Course 1	Course 5
Period 2		
Period 3	Course 2	Course 6
Period 4		
Period 5	Course 3	Course 7
Period 6		
Period 7 (optional)	Course 4	Course 8
Period 8 (optional)		

Source: Pacific Resources for Education and Learning.

Students on this model receive approximately 425 minutes of instruction in a particular class per week. However, students still take the same number of classes per year as on a traditional model.[5]

A/B, or Alternating, Block Schedule

The A/B block schedule divides six or eight blocks of classes between two alternating days so that students only take three or four courses a day. Under the A/B schedule, classes last between 85 and 100 minutes, and students receive credit for their courses at the end of the academic year. Figure 1.2 below compares traditional period scheduling to the A/B scheduling model.[6]

Figure 1.2: Period and A/B Block Scheduling Comparison

Traditional Schedule (Daily Schedule, Year-Long)	A/B Schedule ("A" Day, Year-Long)	A/B Schedule ("B" Day, Year-Long)
Period 1	Course 1	Course 5
Period 2		
Period 3	Course 2	Course 6
Period 4		
Period 5	Course 3	Course 7
Period 6		
Period 7 (optional)	Course 4 (optional)	Course 8 (optional)
Period 8 (optional)		

Source: Pacific Resources for Education and Learning.

[4] Dougherty, B. "Policy Briefing: Block Scheduling in Secondary Schools." Pacific Resources for Education and Learning. http://eric.ed.gov/?id=ED415587
[5] Ibid., pp., 2-3.
[6] Ibid., pp. 3-4.

Trimester Block Schedule

The trimester block schedule, or the 3x5 trimester model, shown in Figure 1.3 divides the year into three 12-week terms with five, 70 minute class periods per day. Students take the same classes every day during the term and earn 0.5 credits per class per trimester. The model is somewhat unique because it claims many of the advantages typically associated with both traditional and block schedules, as is discussed later in this report.[7]

Figure 1.3: Period and 3x5 Trimester Block Scheduling Comparison

Traditional Schedule (Daily Schedule, Year-Long)	3x5 Schedule (1st Term)	3x5 Schedule (2nd Term)	3x5 Schedule (3rd Term)
Period 1	Course 1	Course 6	Course 11
Period 2			
Period 3	Course 2	Course 7	Course 12
Period 4			
Period 5	Course 3	Course 8	Course 13
Period 6			
Period 7 (optional)	Course 4	Course 9	Course 14
Period 8 (optional)	Course 5	Course 10	Course 15

Source: Eugene School District website.

75-75-30 Block Schedule

Under the 75-75-30 schedule, the school year is reconfigured to two 75-day terms (a fall and winter term) and one 30-day, intensive term at the end of the school year. Students take three separate courses during the 75-minute term of approximately 120 minutes each.[8]

The intensive term can be divided into two 15-day terms with one class each or one 30-day term with two classes. Naturally, these classes tend to be longer than 120 minutes. The last term or terms can be used by teachers to review key concepts with students, for students to make up school work missed during the longer terms, or for students to take electives or more advanced core subjects. Figure 1.4 on the following page presents a comparison of traditional scheduling and 75-75-30 scheduling.[9]

[7] "High School Schedule: Frequently Asked Questions." Eugene School District. http://www.4j.lane.edu/instruction/secondary/hsschedule/faq/
[8] Dougherty, B., Op. cit., p. 4.
[9] Ibid.

Figure 1.4: Period and 75-75-30 Block Scheduling Comparison

Traditional Schedule (Semesters 1 and 2)	75-75-30 Schedule (1st Term – 1st 75 Days)	75-75-30 Schedule (2nd Term – 2nd 75 Days)	75-75-30 Schedule (3rd Term – Last 30 Days)
Period 1	Course 1	Course 4	Course 7
Period 2			
Period 3			
Period 4	Course 2	Course 5	
Period 5			Course 8
Period 6			
Period 7 (optional)	Course 3	Course 6	
Period 8 (optional)			

Source: Eugene School District website.

Model Advantages and Effectiveness

Block and period scheduling models offer significant benefits to schools, teachers, and students, and no model has a demonstrable advantage over the others in terms of student achievement.[10] In terms of attendance and student behavior, existing studies indicate that block schedules slightly improve overall attendance and student behavior over traditional schedules.

Block scheduling has gained widespread popularity, even without a robust research base attesting to its effectiveness. The academic research that has been conducted on the effectiveness of block scheduling has not conclusively determined whether implementing block scheduling results in either improved instructional practices or increased student achievement over period scheduling, although advocates assert that block scheduling offers more time for instruction.[11]

Existing studies show that both block and period scheduling models offer significant benefits to schools, teachers, and students.

As is discussed in the next section of this report, many researchers conclude that adequate teacher professional development targeting instructional strategies seems to be the determining factor in whether or not students will perform better or worse under a new scheduling model—not the scheduling model itself.[12]

[10] Trinkle, S. M. "The effects of scheduling on criterion-referenced assessments in Arkansas high schools." UMI Dissertations Publishing. 2011. pp. 29-31, 61. http://search.proquest.com/docview/909975453

[11] Dougherty, B., Op. cit., p. 1.

[12] Raines, J. R. "Exploring differences in teacher attitudes and instructional strategies between traditional and block schedule high schools: A comparison of two large schools." UMI Dissertations Publishing. 2010. http://search.proquest.com/socialsciences/docview/193518380

STUDIES OF MODEL EFFECTIVENESS

A meta-analysis of 58 empirical studies of high school block scheduling conducted by Sally Zepeda and R. Steward Mayers indicates that block scheduling, at least as it has been commonly implemented, has little practical or consistent ability to significantly improve student performance.[13] Although there are some indications that it might improve student grade point averages or certain test scores, none of the research convincingly suggests that student achievement and learning might measurably increase when schools use a block scheduling model. However, research findings were also unable to conclude that period scheduling conferred any measurable improvement in student achievement over block scheduling models, either.[14]

Zepeda and Mayers' meta-analysis assessed the effect of block scheduling on teachers' instructional practices and perceptions. They found that most relevant studies showed that **teachers are generally positive about block scheduling but that these perceptions were not always related to teachers' actual experiences**. The results of Zepeda and Mayers' meta-analysis suggest that there might be a difference between teacher perceptions and block scheduling's effect on instructional practices, as well as the amount that teachers actually change their instructional practices in a block scheduling system.[15]

David Gullatt, Dean of the College of Education at Louisiana Tech University, reviewed four studies that address what he termed "teaching techniques." Like the results of Zepeda and Mayers' meta-analysis, Gullatt's inconsistent findings suggest that, despite the possibilities afforded by increased class period length, implementing block scheduling does not necessarily result in teachers changing their instructional practices. While Gullatt found mixed results on block scheduling's effects on teachers' instructional practices, he also found that teachers seemed to have generally positive perceptions of block scheduling and the opportunities it afforded them.[16]

[13] Zepeda, S., and R.S. Mayers. "An Analysis of Research on Block Scheduling." *Review of Educational Research*. 76:1, 2006, pp. 137-170. Obtained through JSTOR. Full text also available at: http://www.buenabands.org/block-schedule/zepeda--studies-recap.pdf

[14] [1] Wright, M. K. W. "A Longitudinal Study of Block Scheduling in One South Carolina High School." UMI Dissertation Publishing. 2010. http://search.proquest.com/socialsciences/docview/500017648/141B8CA2E2A74E2ED8/1
[2] Gill, W. W. A. "Middle School A/B Block and Traditional Scheduling: An Analysis of Math and Reading Performance by Race." *NASSP Bulletin*. 95:4, 2011. pp. 281-301. http://search.proquest.com/socialsciences/docview/928970971/fulltextPDF/141B8CA2E2A74E2ED8/3

[15] Zepeda, S., and R.S. Mayers., Op. cit.

[16] Gullatt, D. "Block Scheduling: The Effects on Curriculum and Student Productivity." *National Association of Secondary School Principals Bulletin*. 90:3, 2006, pp. 250-266.

CITED MODEL ADVANTAGES

Proponents of block scheduling list many potential advantages of this type of schedule over the traditional six- or seven-class school day. These include:[17]

- **Improved teaching and learning**: Longer class periods give teachers more time to complete lesson plans, develop key concepts, increase the creativity of lessons and try activities that accommodate different learning styles. Individual student projects, peer collaboration, and one-on-one work between teachers and students are also possible with longer classes.
- **Depth versus breadth**: Students and teachers can focus on fewer subjects and study them in greater depth, rather than moving rapidly through material. Teachers teach only three to four classes in a semester, reducing the number of students they regularly work with.
- **Less fragmented school time and improved discipline**: Fewer transitions between classes means less time spent on classroom management activities, such as calling attendance and organizing and focusing the class. Decreasing the number of passing periods reduces the frequency of tardiness and disruptions in between classes. In addition, teachers have adequate time to address disciplinary issues in class and have a stronger rapport with their students.
- **Individualized pacing and more courses per year**: Advanced students can cover material at a faster rate, enabling them to finish sequential classes such as Algebra I and II within one academic year. On the other hand, this schedule allows struggling students to retake a class without falling behind their grade level. Under the 4x4 block, for instance, students take more courses because they enroll in at least eight classes per year instead of six or seven.

One of the main goals of block scheduling is to "make better use of instructional time."[18] Such a goal is hard to measure, as it depends largely on how one defines effective instructional time. Still, given the significantly increased length of class periods, there would presumably be a noticeable difference in instructional practices between schools using block schedules and schools using traditional schedules.

Although the increase of instructional time is a stated purpose of block scheduling, the models **do not always lead to additional or even comparable instruction time over the course of an academic semester or year**.[19] For instance, under a traditional schedule, students spend 500 minutes in any given class over a two-week period (50 minutes per day for 10 school days). Under an A/B block schedule, however, students spend only 450

[17] "Block Scheduling: Innovation with Time." LAB at Brown University. 1998. p. 12-16. http://www.brown.edu/academics/education-alliance/sites/brown.edu.academics.education-alliance/files/publications/block.pdf

[18] Arnold, D. "Block schedule and traditional schedule achievement: A Comparison." *National Association of Secondary School Principals Bulletin*. 86:630, 2002, pp. 42-53.

[19] "Advantages and Disadvantages of the Block Schedule." The North Carolina Public School System, Op. cit.

minutes in class during the same period (90 minutes every other day for ten school days). When spread out over an entire academic semester or year, this can translate to students on a block schedule actually learning less material than their traditionally-scheduled peers.

Instructional time is not the only consideration schools must weigh when considering a switch from one scheduling model to another. For instance, more instructional time with a teacher **may lead to fewer behavioral or attendance problems under block scheduling** than under period scheduling.[20] However, because block schedules tend to condense coursework into less overall time, missing one day under a block scheduling model can put a student further behind than missing a day on a traditional schedule. Likewise, block scheduling provides more opportunities for students and teachers to develop positive, lasting relationships.[21]

In 2006, the North Carolina Public School System (NCPSS) developed a comprehensive list of the advantages and disadvantages of the block schedule. Generally, the "disadvantages" listed in the report can be seen as advantages of the traditional period schedule. The NPCSS findings concerning the advantages of both block and period scheduling—some of which are discussed above—are listed in Figure 1.5.[22]

Figure 1.5: Scheduling Considerations

Consideration	Block Schedule	Period Schedule
Teacher Planning Time	1/4 of a teacher's day is devoted to planning	1/6 or 1/7 of a teacher's day is devoted to planning
Class Size	Class size is normally smaller than under a period schedule	Class size is normally larger than under a block schedule
Instructional Methods	Allows for more varied instructional methods to accommodate all types of learners	Typically lecture-oriented instructional methods are used
Course Load	Students complete eight courses per year	Students complete six or seven courses per year
Class Time	Students spend 90 minutes in class per day but less time in class over an academic year than under a period schedule	Students spend 45-55 minutes in class per day but more time in class over an academic year than under a block schedule
AP Exams	Sometimes AP subjects taught in the fall are not reviewed again before the spring exams	AP subjects are taught year-round and can be reviewed prior to the spring AP exams
Absences	One day of absence leads to more time of missed instruction	Material missed during an absence is more easily covered

Source: The North Carolina Public School System.

[20] [1] Bandur, H. "A Block-scheduling Evaluation at Glassboro High School: Attendance and Grades Have Risen Since a Move to the Intensive Classes Two Years Ago." *The Philadelphia Inquirer*. August 13, 2000. http://articles.philly.com/2000-08-13/news/25593279_1_block-scheduling-85-minute-classes-result
[2] Cobb, R., et. al. "Effects on Students of a 4x4 Junior High School Block Scheduling Program." Research and Development Center for the Advancement of Student Learning at Colorado State University. Published in the Educational Policy Analysis Archives. 7:3, February 8, 1999. p. 6. http://epaa.asu.edu/ojs/article/view/538/661

[21] "Advantages and Disadvantages of the Block Schedule." The North Carolina Public School System, Op. cit., p. 6.

[22] Ibid., pp. 1-5.

Advocates of the 3x5 trimester model suggest that they are able to balance many of the advantages experienced by schools on a block schedule with those experienced by schools on the traditional schedule. In particular, they suggest that they share the AP exam and absence benefits ascribed to period scheduling above and further indicate that their model works well with college schedules.[23]

OPTIMAL SCHEDULING FLEXIBILITY

Each model presented above structures the day differently, allocating different amounts of time and curriculum to each class. While the number of classes offered per day or per year may change based on the scheduling model used, ultimately the amount of annual educational time remains relatively constant. Thus, consideration of the ideal scheduling model for a particular district or school depends largely on which schedule matches the districts or school's priorities with respect to scheduling flexibility.

In general, block schedules can provide districts greater flexibility accommodating remedial or accelerated students, due to their ability to schedule repeat courses multiple times in one school year. Depending on how the curriculum is structured, however, these models can increase the amount of material that needs to be learned in a given term—making it more challenging for students in need of remediation—or can divide the existing curriculum into more sections to accommodate the new class structure. To truly take advantage of the increased flexibility afforded by a new schedule, administrators and teachers must work together to optimize the relationship between a given class schedule and the curriculum.

These observations further highlight the conclusion discussed in Section II in this report that adequate support and professional development targeting appropriate teaching strategies are the most important factors for successfully implementing a new class schedule.

MIDDLE SCHOOL VERSUS HIGH SCHOOL

Available research literature only infrequently alludes to different scheduling models in middle and high school. Most of the available research either considers the groups together or focuses exclusively on high school students. Existing research suggests that as long as teachers and administrators are sensitive to the "social, biological, cognitive development[al], and achievement needs" of their students, the different models have similar results in both middle and high school.[24]

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[23] "High School Schedule: Frequently Asked Questions." Eugene School District, Op. cit.

[24] [1] Mattox, K., D. R. Hancock, and J. A. Queen. "The Effect of Block Scheduling on Middle School Students' Mathematics Achievement." *NASSP Bulletin*. 89:642, March 2005. http://www.nassp.org/portals/0/content/50245.pdf

[2] Increasing numbers of middle schools in Virginia are switching to a block schedule from a traditional schedule. From: Retting, M. "Designing Quality Middle School Master Schedules." School Scheduling Associates. p. 3. http://schoolschedulingassociates.com/handouts/MiddleSchool102408.pdf

CONSIDERATIONS WHEN EVALUATING SCHEDULING MODELS

Transitioning to a new school schedule involves far more than just planning a new schedule. New schedules have implications for curriculum, facilities planning, parents, and other community members. Furthermore, successful implementation requires the cooperation and support of these groups. Consequently, in addition to considering whether a new schedule is feasible from a planning perspective, administrators should assess the reasons for the change and communicate clearly with stakeholders throughout the process to build rapport and consensus.

As the literature and the experience of other districts indicate, **the best place to begin evaluating scheduling models is with district priorities, needs, and goals**. Articulating a shared vision for the district's future and choosing the scheduling model that helps meet those goals the best can help administrators to clearly communicate the motivation for the change and build consensus with other stakeholders.

In addition, **administrators should dialogue freely with other stakeholder groups to build consensus**. Districts often do this through occasional forum-style meetings and other forms of communication like newsletter and blogs. Maintaining honest and open communication with stakeholders helps build consensus and coordinate effective change management.

SECTION II: IMPLEMENTATION CHALLENGES AND BEST PRACTICES

Transitioning to a new scheduling model can present a variety of challenges for administrators and teachers. In this section, Hanover Research examines some of the most common challenges—building consensus, ensuring adequate professional development, and adapting teaching strategies—and the way districts frequently address them.

COMMUNICATION STRATEGIES AND BUILDING CONSENSUS

Clear communication with stakeholders and building consensus are both essential to successful change management, no matter the institutional context.[25] General principles of change management indicate that a clear understanding of the goals and reasons for the change is important for building consensus.[26]

It is also essential to build consensus between the teaching and administrative staff before attempting to implement a new scheduling model. New schedule implementation consultants recommend attending to the district's culture, particularly encouraging a collaborative culture dedicated to the success of students.[27] Generally, these recommendations focus on the district- or school-wide measures—such as informational meetings, professional development, and evaluation programs—that decision makers can address to ensure a smooth transition to a new scheduling model. In a policy briefing for Pacific Resources for Education and Learning, Barbara Dougherty summarizes implementation measures in the following way:[28]

- **Inform all stakeholders**: The author suggests holding informational sessions for superintendents, members of the school board, principals, teachers, parents, and students so that all stakeholders can learn about the potential benefits and challenges of the new scheduling model.
- **Visit schools that have similar schedules**: Visiting schools that have enjoyed success with similar scheduling models will help principals and teachers develop an action plan for implementing the new schedule.

[25] Brown, E., and E. Arriaza. "Change Management and Consensus Building." Abt Associates, Inc. January 1999. p. 1. http://www.abtassociates.com/reports/19998744935597.pdf

[26] Ibid., p. 2.

[27] Dewey, J. "Professional Learning Communities Supported and Enabled by Master(ful) Scheduling." Presentation. pp. 46-53. https://encrypted.google.com/url?sa=t&rct=j&q=professional%20learning%20communities%20supported%20and%20enabled%20by%20master(full)%20scheduling%20dewey&source=web&cd=1&cad=rja&ved=0CCgQFjAA&url=http%3A%2F%2Fcampus.isd728.org%2FOffice%2FCampus_2007_Info%2FIC%2520MN%2520Interchange%252007%2520power%2520points%2FMasterfull%2520Scheduling%2520Theory%2FI_masterfullschedulingtheory_0307-H.ppt&ei=QEOfUrLRLbPIsATDw4HwCg&usg=AFQjCNHwVwpLR54rgHC4otP_W_JEyZBOSg

[28] Adapted from: Dougherty, B. "Policy Briefing: Block Scheduling in Secondary Schools." Pacific Resources for Education and Learning," Op. cit.

- **Schedule appropriate discussion meetings**: Holding regular meetings will allow stakeholders to voice their concerns with the new schedule and talk about ways to overcome the schedule's challenges.
- **Get consensus and approval**: The author notes that support from both the school board and faculty is crucial to the success of a new scheduling model.
- **Provide appropriate and sustained staff development**: Principals and teachers should closely examine the school's curriculum and make necessary changes to textbooks, instructional techniques, and classroom materials to ensure that they are appropriate for use under the new scheduling system.
- **Plan evaluation strategies for the program**: Any new scheduling model should have an evaluative component that allows stakeholders to assess the successes of the program and identify areas for improvement.

PROFESSIONAL DEVELOPMENT

Although there is significant discussion in literature around scheduling models in secondary education, there has been no conclusive evidence demonstrating that one model is more effective than others. In fact, **most experts agree that the success of a scheduling model in a specific school is largely dependent on several factors, including school demographics, proper training for teachers, and "thoughtful planning, organization, implementation, and evaluation" of the scheduling model**.[29] If a school simply switches from one model to another without educating teachers and students on how best to work within the new model, these stakeholders are not likely to see any of the demonstrated or potential benefits the new model could offer.

New schedules require new teaching strategies. The research literature on block scheduling identifies a tendency of teachers at schools with recently adopted block schedules to retain their old teaching strategies, possibly leading to decreased effectiveness. In a 2000 follow up to his seminal 1997 article, "The Road We Traveled: Scheduling in the 4x4 Block," J. Allen Queen notes that although block scheduling has several proven advantages, its effect has been limited by principals and teachers who are not adequately prepared to teach within the new system.

Specifically, Allen criticizes what he deems the "overuse of the lecture method" of instruction under block scheduling, noting that one of the major advantages of a block schedule is that it allows teachers to "employ a variety of instructional strategies that address the learning needs of students."[30] Citing a study conducted by the North Carolina Department of Public Instruction and the University of North Carolina, Allen further notes that "teachers from blocked schools overwhelmingly stated that they had not received

[29] Queen, J. "Block Scheduling Revisited." *Phi Delta Kappan*, 82:3, November 2000. p. 13. http://www.desmetjesuit.org/resource/resmgr/faculty_resources/block_scheduling_revisited_a.pdf
[30] Ibid., p. 8.

sufficient training to use a variety of instructional strategies effectively."[31] He recommends the following as the "most important teaching skills for success in a block class:"[32]

- The ability to develop a pacing guide for the course in nine-week periods, which includes weekly and daily planning;
- The ability to use several instructional strategies effectively;
- The skill to design and maintain an environment that allows for great flexibility and creativity;
- The desire and skill to be an effective classroom manager; and
- The freedom to share the ownership of teaching and learning with the students.

Other potentially appropriate topics to address in training include cooperative learning, curriculum integration, team teaching, assessment, learning styles, multiple intelligences, and technology.[33] Although Allen's comments specifically pertain to problems with transition to block scheduling, they can easily be applied to challenges with transitioning to any type of scheduling model. Regardless of the scheduling model to which a school is transitioning, the effectiveness of the new schedule will depend on the amount of training that takes place prior to and during the transition.[34]

The types of activities that support professional development in preparation for a schedule switch include instruction in different teaching strategies, visiting other schools with similar schedules, ample time for teachers to discuss and plan, and even opportunities to experiment with the longer classes before officially switching to a block schedule. This final activity can be accomplished by making particular scheduling arrangements for teachers to try the format, "pretending that two consecutive periods were one block period."[35] In addition to instructional strategies, teachers need to update the curriculum to fit the format and credit-equivalent expectations under the new model.[36]

[31] Ibid., p. 9.
[32] Ibid.
[33] "Adjusting to the Block Methodology and Instructional Strategies." NC Public Schools. p. 21. http://www.ncpublicschools.org/docs/curriculum/worldlanguages/resources/flonblock/08adjusting.pdf
[34] Baker, D. et. al. "Schedule Matters: The Relationship between High School Schedules and Student Academic Achievement." The Washington School Research Center, Research Report Number 9. October 2006. p. 14. http://www.spu.edu/orgs/research/WSRC-HS-Scheduling-Research-Report_FINAL-10-03-06.pdf
[35] "Research Digest: The Effects of Longer Classes on Learning." Massachusetts 2020. p. 5. http://www.mass2020.org/files/file/Research%20Brief3%20-%20Effects%20of%20Longer%20Classes.pdf
[36] Ibid.

MODIFYING TEACHING STRATEGIES

Educators have developed a variety of ways to structure longer block classes so that students remain engaged and the extended class time is used well. These methods commonly involve diversifying classroom activities by adding group work or discussion to lecture/instruction and review.[37]

The three-part lesson design method, for example, divides the longer class time into three segments: one dedicated to explanation of concepts or information (20-25 minutes), one for application (40-45 minutes), and a final one for synthesis of the information (15-20 minutes). Figure 2.1, below, displays the divisions in the three-part lesson design method with descriptions of each section. The Hotchkiss model includes similar activities but involves a five-step process: homework review (10-15 minutes), presentation (20-25 minutes), activity (30-35 minutes), guided practice (10-15 minutes), re-teach (10-15 minutes), and closure (5-10 minutes).[38]

Figure 2.1: Three-Part Lesson Model Description

Part	Description
Explanation	In this step, the teacher is in charge and on stage and lectures in a traditional teaching manner. Students are more passive; it is the knowledge step on Bloom's Taxonomy of learning and is essential for moving up the knowledge hierarchy.
Application	This is the heart of teaching on the block schedule and should take the most class time. In the Application step, the students become the workers and the teacher becomes the coach. Students are more active, perhaps working in pairs, on computers, in a simulation, or in a circle discussion.
Synthesis	The teacher makes sure that the students have the most critical elements from the classroom application and can summarize the lesson in their notes before they leave the room.

Source: Block Schedule Teaching Strategies.[39]

[37] Rettig, M. "Teaching in the Block: Strategies for Engaging Active Learners." School Scheduling Associates. pp. 3-4. http://www.rcs.k12.va.us/hvms/teacher/Rettig-Slides1-Day.doc
[38] Ibid.
[39] Table contents quoted verbatim from: "Block Schedule Teaching Strategies: A Toolbox of Effective Teaching Ideas." Inside the School. p. 6. http://tech205.weebly.com/uploads/8/8/0/0/8800017/blockschedulespecialreport.pdf

SECTION III: EUGENE SCHOOL DISTRICT PROFILE

Eugene School District in Oregon recently decided to switch their high schools to a 3x5 trimester block schedule. The district documented the transition to improve transparency with all its stakeholders (parents, community leaders, teachers, students, etc.). The approach and schedule it followed could help other districts considering a scheduling change during the planning and implementation processes.

DECISION MAKING PROCESS

The district created a 32-member work group composed of high school teachers and administrators from every school in the district to review the different scheduling models and send a recommendation to the superintendent. The work group decided to evaluate the scheduling models based on eight criteria derived from district educational priorities. The district also considered input from two public forum and surveys administered to district staff and parents. The eight district criteria for selecting a new scheduling model are listed below. The model: [40]

- Meets the needs of each student to be college and career ready;
- Provides for focus and rigor;
- Is sustainable and realistic, given the district's resources;
- Provides consistency, minimizing gaps in learning;
- Builds collaboration, providing time for staff to work together to analyze student learning, adjust instruction and curriculum, and join together for professional development;
- Is flexible and engages students;
- Maximizes the opportunity for students to take classes at other high schools and colleges; and
- Fosters a relationship between teachers and students and among students.

Individual high schools were permitted to choose whether to convert to the new schedule in 2012-2013 or 2013-2014. It appears that most chose to implement it in 2013-2014.[41] Most of the schools also retained their zero period, which helps them offer a greater diversity of electives.[42]

[40] Bullet points adapted from: "High School Schedule: Frequently Asked Questions." Eugene School District, Op. cit.
[41] Ibid.
[42] "3x5 Implementation Steering Committee." Eugene School District. Meeting Report. Thursday, October 3, 2013. p. 2. http://www.4j.lane.edu/wp-content/uploads/2013/05/3x5_Steering_Report_10-03-13.pdf

IMPLEMENTATION BLUEPRINT

The work group has published updates periodically to communicate their progress to stakeholders. The implementation blueprint discussed below is taken from their updates.

Figure 3.1, below, displays the initiatives pursued in the spring of 2013, the semester before the new schedule was implemented at most of the district's high schools. Figure 3.2 on the following page displays specific events and initiatives conducted at specific times during the semester.

Figure 3.1: Eugene School District's New Schedule Implementation Blueprint

Topic	Description
Course Planning	Teachers have been meeting throughout the year, during planning days and at other times, to organize courses for the trimester system. They are adjusting course sessions for 70-minute class periods and 12-week terms.
Curriculum Guides	School curriculum guides are being rewritten to reflect the change to the 3x5 schedule. Students are selecting courses for next year during the months of March and April.
Master Schedule	Administrators at each high school are preparing their master schedules with courses designed for 12-week trimester terms.
School Staff Meetings	Administrators at each high school have held meetings to discuss the 3x5 schedule with school staff and the school community at large. Implementing the new schedule has been discussed at parent council, site council, management team, school leadership, curriculum committee, and general faculty meetings.
Community Information Meetings	School choice events, incoming freshman nights, and other information meetings at high schools this winter and spring have highlighted the 3x5 schedule.

Source: Eugene School District.[43]

Teachers at Eugene School District high schools found that one reliable method of adjusting their courses to the new schedule was to divide a regular course into two or three smaller, more focused courses covering two or three trimesters. Typically, only elective courses = underwent this segmentation, but even this level of segmentation has increased the ease of student scheduling. The new schedule offered additional realized advantages, such as matching up with nearby college schedules.[44]

[43] Table contents quoted verbatim from: "High School Schedule: Progress Reports." Eugene School District. http://www.4j.lane.edu/instruction/secondary/hsschedule/updates/

[44] "3x5 Implementation Steering Committee." Op. cit., p. 3.

Figure 3.2: Eugene School District's New Schedule Implementation Initiatives

Item	Description
April 5, 2013	
Teacher Visit from School with a 3x5 Model	Four teachers from Sisters High School visited our district on April 1 to talk about their experience teaching with the schedule. Teachers met in groups by subject to discuss practices for teaching with longer periods, strategies for working with accelerated and remedial students, and ways to organize courses for the trimester schedule.
Teacher Collaboration	High school teachers across the district met in content area groups to continue work related to transitioning to a trimester schedule.
April 10, 2013	
Student FAQ	Students requested an FAQ document designed for them to communicate the value/benefits of the new schedule from the student perspective. Each school produced a student FAQ document.
April 18, 2013	
Choosing Courses	Students in grades 9, 10, and 11 are beginning to choose the courses they will take next year on the new schedule.
Course Planning	Administrators and teachers continue to plan course offerings to accommodate and support students on the 3x5 schedule.
Community Information Meetings	Schools continue to conduct meetings about the 3x5 schedule for their school communities.
District Teachers Visit a District Using a 3x5 Model	One Eugene district high school plans to send staff to a highly-rated high school that currently has a 3x5 scheduling model to observe and learn how this schedule works at the hosting school.
May 10, 2013	
Continuation of Preparation	High schools are continuing to work with students to forecast next year's courses, provide sample student schedules, and hold parent meetings to share information and answer questions.
September 3, 2013	
New Student Information System	We are happy to report that we are on track in implementing our new student information system, Synergy, and using it to create high school student schedules on the 3x5 trimester system.

Source: Eugene School District.[45]

TEACHER SUPPORTS

Eugene also provided professional development for its teachers to assist with the transition and instructional strategies. The specific supports provided for teachers are listed below:[46]

- Classroom teachers are provided with four to five paid days, depending on their content area, to plan and prepare for the transition to the 3x5 schedule. These days will consist of a combination of extended contract days, release time, and time previously set aside for professional development.

[45] Table contents quoted verbatim from: "High School Schedule: Progress Reports." Op. cit.
[46] Bullet points taken from source with some adaptation: "High School Schedule: Frequently Asked Questions." Eugene School District, Op. cit.

- Teachers from other 3x5 districts will be sharing their strategies with interested teachers.
- Teachers may want to visit a successful 3x5 school. This will be coordinated by the building principal.
- An optional workshop during August that addresses the issue of pedagogy in a 3x5 schedule will be offered.
- Administrators and counselors will receive training in how to develop four-year schedules so that all students will graduate college- and career-ready.
- Extra paid work days to support the transition also have been provided for high school counselors and for staff members who schedule classes for special education students.

Teachers still work an eight-hour day, late start/early release schedules are not necessarily changed, and part-time teachers are pro-rated.[47]

PERFORMANCE EVALUATION

In addition to creating the transition work group, the district created a smaller 3x5 Implementation Steering Committee to guide the implementation and "[address] specific issues that surface at the sites as the implementation proceeds." In addition to meeting regularly, coordinating discussions and needs with other relevant committees and groups, and assisting with local needs, the committee communicates with the district about ongoing analysis of the new schedule's effectiveness.[48]

At their October meeting, the committee noted that the district should begin collecting the following types of data to help measure the effects of the new schedule:[49]

- Freshman failure rates and freshman grades
- Math data, especially since math classes can now be split between terms
- Changes in need for licensure and endorsements
- Attendance rates compared to previous years
- AP/IB completion and amount of college credit earned through coursework
- Participation rates and credits earned for struggling students
- Data and change for shared staff
- Key indicators from achievement support

[47] Ibid.
[48] "3x5 Implementation Steering Committee," Op. cit.
[49] Bullet points taken from source without adaptation: Ibid.

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