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School Start Times

Prepared for

David Douglas School District

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School Start Times

Currently, in the David Douglas School District, high schools begin at 7:40 a.m., middle schools begin at 8:20 a.m., and elementary schools begin at 9:15 a.m. The district is now seeking information to determine if this configuration of start times is the most useful and beneficial to students. Thirty years of research in sleep rhythm and circadian neuroscience indicates that school start times can impact student learning and health risks (Kelley, Lockley, Foster, & Kelley, 2015). This report will discuss that research, including the biology of sleep and the impacts of sleep loss. In addition, information will be provided from districts that shifted school start times to reflect sleep science research. Finally, this report will provide suggestions for addressing common concerns related to changing school schedules, including bussing, after-school activities, and safety, and recommendations for engaging the school community in the process of making school start time changes.

Biology of Sleep

It is commonly accepted that sleep is a *basic pillar* of human health, and is necessary for optimizing children's growth and development (Weygandt, 2017). Less commonly understood is the uniqueness of sleep patterns in adolescents. From the onset of puberty, most teens experience a *phase delay* in their natural sleep schedule, due to developmental neurological changes. As a result, teens naturally fall asleep later and wake later than their younger counterparts, and they have a physiological need for approximately nine hours of sleep (Kelley et al., 2015). This sleep-wake pattern shift can be up to two hours later than sleep-wake patterns in childhood. For example, the average natural waking time for a 10-year-old is 6:30 a.m., but the average waking time for a 16-year-old is 8:00 a.m. (Kelley et al., 2015).

Most teens have difficulty falling asleep earlier than 11:00 p.m. or waking before 8:00 a.m., even if they choose to go to bed earlier in the evening (Carrell, Maghakian, & West, 2011). Many parents and teachers believe that students irresponsibly stay up too late; however, due to the neurological sleep-phase shift, adolescents' brains actually do not allow them to fall asleep earlier in the evening, regardless of the need to awaken early the next morning (Kelley et al., 2015). Due to the phase-shift in adolescent sleep patterns, asking a teen to awaken at 7:00 a.m. is akin to asking an adult to awake at 4:00 or 5:00 a.m. (Carrell et al., 2011).

In modern society, the main determinant of wake times for adolescents is their school start time (Wheaton, Ferro, & Croft, 2015). Given the neurological propensity for teens to fall asleep late in the evening, very early school start times can negatively affect the quantity and timing of a teen's sleep, with teens often losing over two hours of biologically-needed sleep on school days (Kelley & Lee, 2014). The American Academy of Pediatrics (AAP) in 2014 recommended that adolescents should obtain between 8.5 and 9.5 hours of sleep each night. Similarly, the Centers for Disease Control and Prevention (CDC) in 2017 recommended that 13- to 18-year-olds need between 8 and 10 hours of sleep each night. However, a survey of adolescent sleep habits indicated that 87% of teens slept fewer than 8.5 hours per night, with most sleeping fewer than 7 hours per night, usually due to the need to waken early enough to arrive at school on time. This equates to chronic sleep loss, which the AAP (2017) has classified as a public health issue. A chart of recommended sleep totals is offered in Appendix A.

Impacts of Sleep Loss

Some effects of chronic sleep loss are well documented, such as a sleep-deprived adolescent's body attempting to make up for lost sleep during non-typical hours, including during class (Weygandt, 2017), or teens being naturally more alert later in the day (Kelley et al.,

2015). Other effects appear less well-known. For example, students who received at least eight hours of sleep per night engaged in fewer unhealthy and risky behavior choices, such as alcohol abuse, drug abuse, or unsafe sexual activity (CDC, 2011; Wahlstrom et al., 2014). Most impacts of chronic sleep loss in adolescence can be categorized as academic, health-related, and behavioral, as follows.

The main academic impacts of teen sleep loss are related to brain functioning. Neurologically, the consolidation of long-term memories is one of the major functions of the brain while asleep. Thus, disrupting or shortening needed sleep times can prevent long-term memories from forming – a direct impact on a student's ability to learn new information and skills (Kelley et al., 2015). Similarly, disrupted sleep can also interfere with the brain's ability to maintain focus and attention, as well as the brain's ability to engage in executive functioning (Kelley et al., 2015). This refers to the ability for an individual to control impulses, monitor decision-making, shift attention, plan and organize, and monitor task-completion (Gioia, Isquith, Guy, & Kenworthy, 2017), which are all necessary functions for learning. Beyond brain-related learning, the 28% of teen students who fall asleep in school at least once a week (AAP, 2014) or skip their first period class are missing instruction. Overall, the number of hours a teen sleeps is positively correlated with academic achievement (Carrell et al., 2011).

In general, insufficient sleep can impair healthy brain development (Basch, Basch, Ruggles, & Rajan, 2014). In addition to decreased concentration and thinking skills and poor communication, chronic sleep loss has been linked to an increased risk of obesity, diabetes, and hypertension or high blood pressure (AAP, 2014). Increased health-risk behaviors are also associated with high school students who obtain insufficient sleep. These include engaging in less exercise, eating a poorer diet, spending more time in front of computer or television screens,

using illegal substances, and engaging in risky sexual activity (CDC, 2011). Since adequate sleep improves the ability to manage emotions and make decisions, sleep deprived teens tend to have lower motivation, decreased impulse control, and poorer emotional regulation and mood (Child Trends, 2014). In addition, adolescents who experience chronic sleep loss tend to experience more anxiety, more depression, and have more suicidal tendencies than teens who get more sleep (CDC, 2011). While multiple factors contribute to poor teen sleep habits, including technology use, overscheduling, and excessive homework demands (Garey, 2017), shifting school start times can be an effective tool to increase the likelihood of teens acquiring adequate sleep. For more information about the impacts of chronic sleep loss and sleep disruption, please refer to Appendices B and C.

Impacts of Early Start Times

Given the biological sleep-shift that occurs in adolescence, and the significant negative impacts of chronic sleep loss, school start times have been examined as a possible variable in shifting this trend. One study, for example, found that 17- and 18-year-old students who started classes before 8:00 a.m. performed significantly worse in all their courses than students who started later in the day (Carrell et al., 2011). This suggests that academic performance is not only affected during that first-period, early class, but also throughout the remainder of the day. Similarly, when comparing students taking the same class, either at 8:00 a.m. or later in the day, the students in the early class performed consistently worse on end-of-year assessments than their peers who took the same class later in the day (Jacob & Rockoff, 2011). Some researchers likened early secondary level start times to replacing an average teacher with an ineffective teacher for students who attend school that early (Jacob & Rockoff, 2011).

Another significant impact of early start times involves driving after insufficient sleep. Sadly, teens are often at the highest risk of drowsy driving, and teen drivers accounted for almost 10% of fatal accidents caused by drowsy driving in 2015 (National Highway Traffic Safety Administration, 2015). Early school start times are recognized as a significant contributor to this behavior (AAP, 2014).

Impacts of Shifting Start Times

Waking before the circadian rhythm is ready, combined with the biological inability to fall asleep at an earlier evening hour, results in chronic sleep deprivation. Child Trends (2014) suggests that starting school later in the day can help adolescents obtain the sleep they need. Wahlstrom et al. (2014) surveyed over 9,000 high school students and found that fewer than 35% of teens reported getting at least 8 hours of sleep when school started as early as 7:30 a.m. Yet, that percentage rose incrementally for schools that began later, with over 65% of students obtaining at least 8 hours of sleep at schools that started at 8:55 a.m. or later.

In a multi-district, multi-state study, Wahlstrom et al. (2014) determined that grades in core subject areas, state and national achievement test performance, and attendance rates all improved when school was shifted to start at 8:35 a.m. or later. Jacob and Rockoff (2011) found that shifting secondary school start times one hour later can increase reading and math scores on standardized tests, with the gains being twice as large for students from disadvantaged backgrounds. Large drops in absences and tardiness and improved grades occurred when start times were shifted later for teens (Owens, Drobnich, Baylor, & Lewin, 2014), and fewer students skipped first period (Hanover Research, 2013). The United Kingdom and New Zealand also found improved academic achievement and student behavior when schools were shifted to start later (but no later than 10:00 a.m.) for secondary students (Kelley & Lee, 2014).

In addition to academic and behavior improvements, teachers observed that students appeared more alert and focused when school started later (Owens et al., 2014), and students reported fewer symptoms of depressed mood (AAP, 2014). Teachers also tended to prefer later start times for middle and high school (Hanover Research, 2013). Also, districts did not report any adverse impacts to their athletic programs, and many reported improved team performance (Owens et al., 2014). Parents also noted positive impacts, and in districts that shifted to later start times, parents reported that their children were "easier to live with" (Kelley & Lee, 2014, p. 2). Finally, in one study, the number of teen driver car crashes was reduced by 70% when schools shifted start times from 7:35 a.m. to 8:55 a.m. (Wahlstrom et al., 2014). This echoes a study of neighboring districts with different high school start times, where a significantly higher teen-involved automobile crash rate was found in the district with earlier start times. This effect was evident across the course of the entire day, not just in the before-school hours (Vorona et al., 2011).

Common Concerns

When considering a schedule shift in a school district, many parents and community members have concerns about how changes might work. One primary concern for districts centers on managing the schedules of school busses. In most districts that have successfully implemented a schedule shift, the middle and high schools were shifted to start later, while elementary schools were shifted to start earlier (Payne, 2017). In these districts, bussing was often staggered, with elementary students transported first, and secondary students second. Some districts employed three bussing groups, with elementary first, middle or high school second, and the remaining level third (Payne, 2017). Some districts chose to have middle and high school students share busses and start school at the same time, while other districts started

elementary and middle schools at the same time (Owens et al., 2014). Other districts provided bussing for elementary school first, and middle schools second, while providing public transportation bus passes for high schoolers (Payne, 2017).

While many stakeholders had concerns about giving elementary students the earliest start times, Hanover Research (2013) found that, while middle and high school students benefited from later start times, even if only half an hour later, elementary students did not appear to benefit from starting school later in the morning. This aligns with the biological sleep schedules of younger children, who often arise hours earlier than adolescents (Kelley et al., 2014). In addition, starting elementary school was often found to have little impact on families who already used before-school childcare options (Collins, Indorf, & Klak, 2017).

Sports schedules and impacts on student athletes can also be a significant concern for districts and parents. However, when many school districts reviewed the district or regional sports competition schedules, they found a very low number of games would require early dismissal for students to attend (Collins et al., 2017). Most districts chose to allow athletes to leave school early on game days, when necessary. Some also added a zero period to provide scheduling options for student athletes who may need to leave early from time to time, or scheduled sports and activity participants into a last-period physical education class (Payne, 2017). Other districts scheduled participants into free periods or study hall at the end of the day (Jacob & Rockoff, 2011). Other time-saving efforts included applying athletic tape for athletes on the bus, rather than at the game site; conducting some before-school workouts; and adding lights, or acquiring mobile lights, to practice fields as days become shorter in the winter (Payne, 2017). Some districts have chosen to provide city bus passes to students for free, thus allowing students to attend after-school activities while still having a safe way home (Collins et al., 2017).

Multiple case studies are included in Appendix D. Please refer to these cases to learn how different districts addressed the request to alter school start times for their adolescents.

Conclusions and Next Steps

The American Academy of Pediatrics (2014) recommends that adolescents not start school before 8:30 a.m. However, even shifting start times 30 minutes later can reduce sleepiness in class, improve student concentration, and reduce behavior problems and absenteeism (AAP, 2014). In a study of 70 school districts across the nation who had successfully shifted to later secondary schedules, most districts chose between 8:30 and 9:00 a.m. as the new start time (Owens et al., 2014). In these districts, success was predicated on strong leadership from the superintendent, staff, and school board. In addition, citing scientific research on sleep health and promoting the benefits to health, safety, and academics was also paramount (Owens et al., 2014).

The following recommendations may help districts move forward:

1. Consider surveying middle and high school students to gauge their levels of sleepiness and their interest and support for a proposed start time change (Hanover Research, 2013).
2. Consider asking principals to conduct two weeks of observations during first period classes. Collins et al. (2017) noted that when asked to do this, many principals arrived at their own conclusion that students become significantly more alert in class after approximately 8:30 a.m., and this increased the principals' support for shifting start times.
3. For parents, teachers, and other stakeholders, consider holding education sessions for key stakeholders to share information and refute misconceptions.

For example, parents and teachers may believe that delaying school start times will simply encourage teens to stay up even later. However, evidence indicates that later school starts do not result in students changing their bedtime, but they do result in students sleeping later, thus increasing total sleep time for students (AAP, 2014). Leaders can use these sessions to emphasize the short-term dangers of sleep loss, such as poor alertness, less focus, lower grades, and poor emotional experiences. Also, leaders can note the long-term dangers of chronic sleep loss, such as insomnia, depression, high blood-pressure, and diabetes (Owen et al., 2014).

4. Consider asking local pediatricians to talk with parent groups, and local sports medicine specialists to talk to athlete groups, about the academic and physical performance benefits of adequate sleep and appropriate sleep timing (Collins et al., 2017).
5. Consider creating a task force to propose multiple scheduling options for further discussion with stakeholders and the school board (Hanover Research, 2013). This task force might also prepare responses to common arguments against school start time shifts and have those responses available to stakeholder groups at meetings or information sessions (Wheaton et al., 2015).
6. For after-school activity participants and coaches, consider reviewing district and regional sports and other competition schedules to determine the impact on student athletes who may need to leave early on certain days (Collins et al., 2017). For example, for the districts in the Mt. Hood Conference of the Oregon State Activities Association (OSAA) 6A classification, in which

David Douglas School District is a member, high school start times range from 7:35 a.m. to 8:35 a.m. (OSAA, 2017). It may be helpful to gather data from later-starting high schools in the conference to assist with decision-making about student schedules.

7. Consider conducting close observations of all after-school activities (sports, marching band, cheerleading, etc.) to learn the details of their current routines before deciding on solutions to scheduling conflicts (Payne, 2017).
8. Consider sharing that school districts could conceivably be seen as legally negligent (e.g., not exercising a reasonable duty of care) for not addressing the sleep needs of students. With more than three million adolescents identified with "delayed sleep phase disorders," it could be argued that there is a preponderance of evidence that indicates the *known risks* of early school start times. Therefore, districts might be considered negligent for maintaining early school start times (Kelley & Lee, 2014).

As noted by Kelley et al. (2015), "Synchronizing education institutions' timings to adolescent biology to enable adequate sleep time seems both practical and necessary" (p. 221), and districts across the nation are responding to this need (Wahlstrom et al., 2014). Once the start times have been changed, it is important to teach and emphasize healthy sleep habits to students, so they can maximize the benefit of later school start times (Owens et al., 2017).

References

American Academy of Pediatrics, (2014). Policy statement: School start times for adolescents. *Pediatrics, 134*(3), 642-649.

Basch, C. E., Basch, C. H. Ruggles, K. V, & Rajan, S. (2014). Prevalence of sleep duration on an average school night among 4 nationally representative successive samples of American high school students, 2007-2013. *Preventing Chronic Disease, 11*(E216), 1-2.

Carrell, S. E., Maghakian, T., & West, J. E. (2011). A's from zzzz's? The causal effect of school start time on the academic achievement of adolescents. *American Economic Journal: Economic Policy, 3*, 62-81.

Centers for Disease Control and Prevention. (2011). Insufficient sleep among high school students associated with a variety of health-risk factors. Retrieved from https://www.cdc.gov/media/releases/2011/a0926_insufficient_sleep.html

Centers for Disease Control and Prevention. (2017). *How much sleep do I need?* Retrieved from https://www.cdc.gov/sleep/about_sleep/how_much_sleep.html

Child Trends. (2014). *Are the children well? A model and recommendations for promoting the mental wellness of the nation's young people*. Washington, DC: Robert Wood Johnson Foundation.

Collins, T. A., Indorf, C., & Klak, T. (2017). Creating regional consensus for starting school later: A physician-driven approach in Southern Maine. *SleepHealth, 3*(6), 479-482.

Garey, J. (2017). Why are teenagers so sleep deprived? A perfect storm of biology, technology, and homework. Retrieved from www.childmind.org.

Gioia, G. A., Isquith, P. K., Guy, S. C., & Kenworthy, L. (2017). Behavior rating inventory of executive functioning, second edition. *Journal of Pediatric Neuropsychology, 3*(3), 227-231.

Hanover Research. (2013). *Impact of school start time on student learning.* Washington, DC: Author.

Hirshkowitz, M., Whiton, K., Albert, S.M., Alessi, C. Bruni, O., DonCarlos, L., . . . Adams Hillard, P. J. (2015). The National Sleep Foundation's sleep time duration recommendations: Methodology and results summary. *Sleep Healthy, 1*(1), 40-43.

Jacob, B. A., & Rockoff, J. E. (2011). *Organizing schools to improve student achievement: Start times, grade configurations, and teacher assignments.* Washington, DC: The Brookings Institution.

Kelley, P., & Lee, C. (2014). *Later education start times in adolescence: Time for change* [policy report]. Denver, CO: Education Commission of the States.

Kelley, P., Lockley, S. W., Foster. R. G., & Kelley, J. (2015). Synchronizing education to adolescent biology: 'let teens sleep, start school later.' *Learning, Media and Technology, 40*(2), 210-226.

National Highway Traffic Safety Administration. (2015). *Asleep at the wheel: A national compendium on efforts to eliminate drowsy driving*. Washington, DC: US Department of Transportation.

Oregon School Activities Association. (2017). OSAA school classifications and districts. Retrieved from www.osaa.org.

Owens, J., Drobnich, D., Baylor, A., & Lewin, D. (2014). School start time change: An in-depth examination of school districts in the United States. *Mind, Brain, and Education, 8*(4), 183-225.

Payne, P. (2017). Report from SLEEPinFairfax: Successful practices and approaches to changing school start times. Retrieved from http://www.startschoollater.net/successful-approaches-thanks-to-sleepinfairfax.html

Vorona, R. D., Szklo-Coxe, M., Wu, A., Dubik, M., Zhao, Y, & Ware, J. C. (2011). Dissimilar teen crash rates in two neighboring southeastern Virginia cities with different high school start times. *Journal of Clinical Sleep Medicine, 7*(2), 145-151.

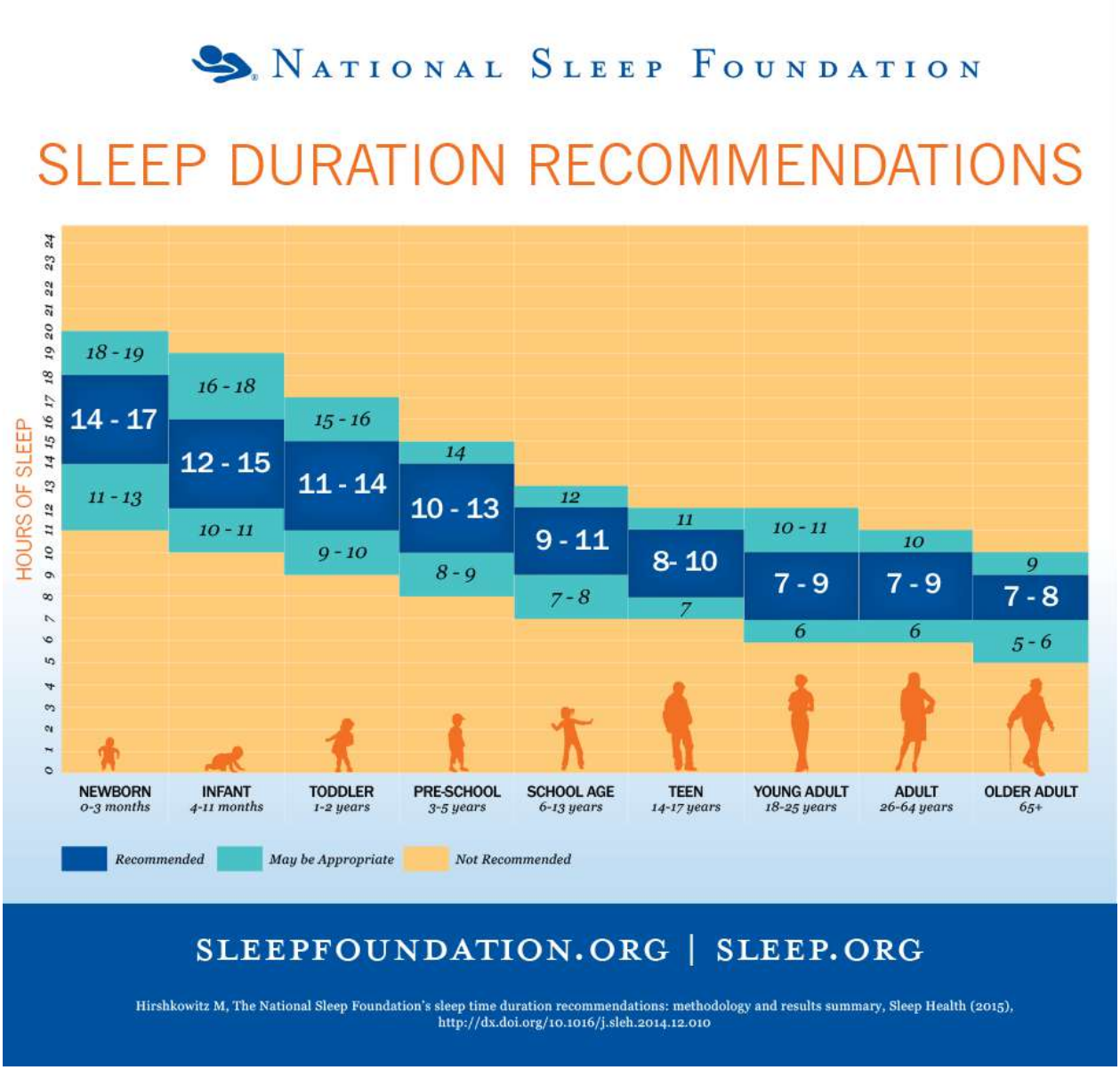
Wahlstrom, K., Dretzke, B., Gordon, M., Peterson, K., Edwards, K., & Gdula, J. (2014). *Examining the impact of later school start times on the health and academic performance of high school students: A multi-site study.* St Paul, MN: University of Minnesota Center for Applied Research and Educational Improvement.

Weygandt, K. (2017). In support of later school start times for adolescents – A statement from The Family Sleep Institute. Retrieved from http://www.familysleepinstitute.com/research-and-development.

Wheaton, A. G., Ferro, G. A., & Croft, J. B. (2015). School start times for middle school and high students -- United States, 2011-12 school year. *Centers for Disease Control and Prevention's Morbidity and Mortality Weekly Report, 64*(30), 809-813.

Appendix A

Sleep Duration Recommendations



From: Hirshkowitz, M. (2015). The National Sleep Foundation's sleep time duration recommendations: Methodology and results summary. *Sleep Healthy*

Appendix B

Impacts of Chronic Sleep Loss in Adolescents

Physical health and safety

- Increased obesity risk
- Metabolic dysfunction (hypercholesterolemia, type 2 diabetes mellitus)
- Increased cardiovascular morbidity (hypertension, increased risk of stroke)
- Increased rates of motor vehicle crashes ("drowsy driving")
- Higher rates of caffeine consumption; increased risk of toxicity/overdose
- Nonmedical use of stimulant medications;
- Lower levels of physical activity

Mental health and behavior

- Increased risk for anxiety, depression, suicidal ideation
- Poor impulse control and self-regulation; increased risk-taking behaviors
- Emotional dysregulation; decreased positive affect
- Impaired interpretation of social/emotional cues in self and others
- Decreased motivation
- Increased vulnerability to stress

Academics and school performance

- Cognitive deficits, especially with more complex tasks
- Impairments in executive function (working memory, organization, time management, sustained effort)
- Impairments in attention and memory
- Deficits in abstract thinking, verbal creativity
- Decreased performance efficiency and output
- Lower academic achievement
- Poor school attendance
- Increased dropout rates

adapted from: American Academy of Pediatrics (AAP). (2014). Policy statement: School start times for adolescents. *Pediatrics, 134*(3), 642-649.

Appendix C

Impacts of Severe Sleep Disruption

Cognitive Responses	Emotional Responses	Physical Responses
Reduced:	*Increased:*	*Increase risk of:*
Concentration	Motor skills mistakes	Metabolic abnormalities
Performance	Stimulant use	Diabetes II
Attention	Sedative use	Weight gain
Memory encoding	Alcohol use/misuse	Cardiovascular disease
Memory consolidation	Exhaustion	Disorders of the hypothalamo-pituitary-adrenal (HPA) axis
Multi-tasking	Irritability	Reduced immunity
Decision-making	Mood fluctuations	Drowsiness
Creativity	Anxiety	Micro-sleeps
Productivity	Depressed mood	Unintended sleep
Socialization	Frustration/anger	Bodily sensations of pain and cold
Communication	Impulsivity	Hypertension
Empathy		

adapted from: Kelley, P., Lockley, S. W., Foster. R. G., & Kelley, J. (2015). Synchronizing education to adolescent biology: 'let teens sleep, start school later.' *Learning, Media and Technology, 40*(2), 210-226.

Appendix D

Case Studies from the National Sleep Foundation Adolescent Sleep Initiative

Arlington, Virginia

30 Schools • 19,000 Students
Before: High School-7:30 am,
Middle School/Elementary School-8:10 am, Elementary School-8:50 am
After: Middle School-7:50 am, Elementary School-8:00 am, 8:25 am, or 9:00 am, High School-8:15 am

Summary

Arlington Public Schools pursued a change in school start times starting in 1999. After a long and detailed decision making process, a change was implemented in September 2001, which gave high school students an extra 45 minutes of sleep. The district administration commissioned a task force which followed strict guiding principles and very thoroughly studied the change and all its related issues. As a result of their careful planning, the district transitioned smoothly to a late start for high school which was well received.

Profile

Arlington is a large, urban county of 26 square miles, just across the river from Washington, DC. The Arlington Public School system includes more than 30 schools and over 17,000 students. The district had been struggling with transportation resources for several years, and at the time of the change was operating under a 4-tier transportation program, with start times at 7:30 am (HS), 8:10 am (MS/ES), 8:50 am (ES), and 9:20 am (Alternative Schools). Arlington runs a 7-period schedule in the high school, although they considered expanding the day as part of the bell times change.

Challenge

Arlington's administration understood from the beginning that it would face many challenges to achieving later start times for their high schoolers. It addressed these challenges by forming committees to investigate each. However, there were also several parameters that arose from limited resources. Arlington's major challenge was to incorporate all of the following assumptions into a plan for change: the primary consideration should be to improve instruction and academic achievement; for safety reasons, no school should start before 7:50 am; there should not be significant disadvantage to any other group or school level; no change should significantly compromise participation in extracurriculars; and, most importantly, the number of buses required could not increase.

Champions

The Arlington School Board appoints members to a 50-member Advisory Council on Instruction, which over- sees 15 instruction program committees responsible for reviewing and developing system-wide programs. In 1999 this group created a High School Start Time Committee which reviewed research and recommended to the school board that they change start times. In response, the superintendent formed an interdepartmental team to investigate the implementation of such a change. This group was responsible, along with the superintendent and school board who sponsored them, for pushing through the change.

Journey

The start:

The interdepartmental team that the superintendent put together in February 2000 was instructed to prepare for an implementation in September 2001. They start- ed by dividing their work. Two groups were formed, the Working Group and the Implementation Group. These two groups together developed 12 scenarios of changed start times. These were then studied in depth by the two groups and their subcommittees.

The organization:

The subcommittees under the Working Group included Research, Implementation and Public Engagement. The subcommittees under the Implementation group were Scheduling, Before and After-School Activities and Transportation. They also formed a Steering Committee to guide all of these groups. The school board gave clear direction to each of these groups, while maintaining flexibility in the method of reaching their goals. Arlington understood that it would be essential to involve as many people as possible in the process in order to secure support. Therefore, each group was focused, but open: The Research subcommittee looked not only at the research on high school students, but on the sleep needs of middle and elementary aged students as well. They were searching for factors that should be included in the determination of an optimal start time for each group. This group also interviewed individuals from other schools that had made the change to glean important information from their experiences.

The Public Engagement subcommittee's role was to inform and engage the community in the process. They wanted as much input as possible, but also wanted the stakeholders to be able to make informed decisions and opinions about the sleep needs of the students. In order to accomplish this, the group issued press releases and posted information on the district Web page. They sent letters to the PTA newsletter, the employee newsletter and school newspaper editors. An e-mail account was set up to receive feedback from the community. Representatives attended PTA meetings to share the work that was being done and answer questions.

The Scheduling subcommittee was tasked with determining the impact on the master schedule of each of the alternatives. They contemplated an 8-period day and flexible scheduling at the high school level to alleviate some of the problems with the schedules. They determined the impact on special programs, like the career center. They also investigated the personal impact to families and teachers.

The Before and After-School Activities subcommittee reviewed the potential consequences of a start time change on activities at schools of all levels and the com- munity at large. Some of the programs they considered were: extended day programs for younger students, remediation activities, art and music programs, inter- scholastic and intramural sports, employment, and

family responsibilities.

The Transportation subcommittee examined each alternative for its feasibility within the constraints of the transportation system. Transportation was the driving force in determining what changes were possible. The district hired a transportation consultant to help deter- mine the most efficient system that could be used while also considering the sleep and health of the students.

Getting Closer:

By June, the groups had narrowed the options to four: the current schedule (to not make a change) and three alternatives. These were presented to the community at large for review and discussion. A flyer that detailed each of the four proposals was distributed in back-to-school packets, at the county fair, and at the superintendent's Summer Chats. There were two public forums held to elicit response to each of the alternatives. A survey was developed and administered to the students, parents, and teachers. The committee requested statements from each of the principal groups (middle, elementary, high) and other impacted departments. The result of these discussions was that support for any one propos- al was inconclusive. They also, during this period, made some adjustments to the proposals based on input from the various stakeholders.

Then, in early October, the two large groups met to try to rank the proposals. They were unable to reach a consensus, so the Steering Committee met the next day to develop the recommendation to the school board, who only wanted to see one proposal. After much deliberation, they agreed on one proposal that achieved the goal of later start for high school with the least impact to the other schools. The committee also determined that two other options were viable, if the board rejected this one. The Steering Committee presented this option to the board at the end of October. The board then held a work session for staff to review and revise the proposal. Several changes were made to specific schools, and then the staff surveyed teachers to determine how many would leave the district if this proposal were implemented. The results indicated that 14% of teachers would look for other employment, but the district understood that this was probably an overestimation of what would really happen.

The revised proposal was published in December, at which time the PTAs at several of the schools requested a change in start time. The district was able to accommodate most of these because there were sufficient requests that a switch was made with no net change to the proposal.

Solution

The board accepted this revised proposal as the final plan for changing school start times. The middle schools would start at 7:50 am, elementary at 8:00, 8:25, or 9:00 am, and high schools at 8:15 am. This meant an extra 45 minutes of time in the morning for the high school students to sleep.

Implementation

The next step was for the staff to develop an implementation plan. A team was put together for this purpose. They first identified all of the issues that were left to resolve, and then assigned someone to investigate possible solutions. An Issue Paper was written on each of these issues, which included a description of the problem and a detailed proposed solution.

At this point, the school board increased their role as leaders of this movement to maintain momentum.

Denver, Colorado

148 Schools • 72,000 Students

Before: High School-7:30 am- 2:30 pm
After: High School-7:30 am- 4:15 pm

Summary

Denver Public Schools have adopted a change in high school start times that is a bit unusual. As a result of a change in the transportation system, Denver's high school students now have a flexible schedule and can choose their start and ending times. This movement was led by their superintendent and planned and implemented by district staff. The only major barrier was convincing parents of the safety of public transportation.

Profile

Denver is a large urban district. Denver Public Schools runs 13 high school programs and a Career Education Center that together serve over 17,000 students. Denver has always prided itself on its varied and flexible programs. The district allows each school a lot of local discretion in determining the internal schedule and the programs that it will offer. However, all high schools have always started at 7:30 am. Prior to the change, Denver Public Schools provided transportation to all students who attended neighborhood schools and lived at least 3.5 miles away. They also provided transportation to all students attending magnet schools across the district, to special needs students and for all athletic programs.

Challenge

Denver initially met a lot of opposition to the idea of mandating a later start time. But once they had solidified their proposal of switching to public transportation and a flexible schedule, the main concern in the com- munity was about the safety of the public transportation for students.

Champions

The superintendent of Denver Public Schools proposed that this district look at two issues: bus transportation and school start times. The staff then researched these and developed the idea of switching to public transportation and allowing flexibility in scheduling. While they did have opportunities for public comment and maintained a steady flow of information, the district staff was responsible for all of the planning for this change.

Journey

After the superintendent proposed that transportation and scheduling be studied, the district staff produced an information report. They found research on sleep and school start times and talked to other districts that had made changes in either system. The staff was convinced that later start times were important for high school students. But after presenting this plan they met immediate opposition from parents and students who were worried about extracurriculars, jobs and childcare for younger children – all the issues that commonly surface in the discussion of later start times. So the district backed off of this proposal and looked for another solution.

They decided to investigate the impact of switching from a yellow bus system to Regional Transportation District (RTD) services. The district looked at different factors such as ridership, ride times and distance from bus stops in both systems to determine the feasibility of the switch. What they found was that for many students ride time would decrease, and the overall district aver- age was an increased ride time of only three minutes. Students were also very close to the RTD bus stops. They also determined that based on current ridership, the district could actually save money by paying for the bus passes for students to ride RTD and canceling the yellow bus runs.

Parents who were concerned about safety on the RTD buses were comforted by several facts. The current voluntary student ridership on RTD exceeded the ridership of yellow buses, indicating that it was a safe and reliable mode of transportation. Principals reported very few problems with this transportation. RTD also has one of the lowest crime occurrence rates in the country.

All of the high schools did surveys of their students about what schedule and time frame they would prefer. The results indicated that very few students wanted the change because they were committed to their activities after school. But the district predicted that these num- bers would go up over the years as new students entered the schools who were not conditioned to the system of early start times.

At the February 5, 2004 school board meeting, a proposal to switch to RTD buses and to open the high schools from 7:30 am - 4:15 pm, allowing students to choose a schedule appropriate to their needs, was presented. The issue was discussed at two subsequent meetings, one public hearing and one with presentations by the high school principals about their views on the proposals and the results of their discussions with students and parents. On March 18, 2004, a final report for action was presented to the board and adopted.

Solution

Denver's 12 high schools are now open from 7:30 am- 4:15 pm. While each student has a minimum number of hours that he or she must be at school, each student can choose when they will start and end their day. This was possible because the students were now able to ride the public buses at any time during the day.

The district provides RTD passes to all students who live more than 3.5 miles from the neighborhood school that they attend and to students attending magnet schools across the district. The yellow buses still run for special needs students, athletes and elementary and middle school students. The district also established a set of parameters involving ride time, number of transfers, and the difference in ride time from the old system. In cases where these parameters were exceeded, where possible, the district has provided a different transportation option such as an express bus pass, or paying to have additional buses added to certain routes. The number of classes offered at the high school at a particular time is based on student demand.

Implementation

The district and RTD worked together to find a plan that would be at least cost-neutral. The final plan benefits both because RTD had higher ridership, and the district saved about $750,000 annually on the transportation budget. They were able to get rid of about 60 buses. Schools were flexible about athletic practices, which were scheduled either before or after school or

during the last two periods of the day.

Teachers were given the opportunity to choose to change their schedules. Enough teachers were willing to shift to provide for the number of classes that moved. No new teachers were hired, and no teachers had to be paid more.

The district and RTD combined resources to provide information to families about the change. Question and answer sheets were posted on both Web sites, as well as sent home with students to their parents.

Results

The transportation aspect of the change went well. The few logistical problems were solved within a month. There were very few complaints, even though the change affected thousands of students.

In the first year, about 20% of high school students chose a later start to their school day (after 8:00 am), and almost 10% chose to start at 9:00 am. The district expects, however, that this number will go up over time, as students see the benefits and new students enter the schools. The district anticipates being able to implement many new programs as a result of the success of this change. These include making computer and science labs more available for student use; providing tutoring opportunities, study skills classes and ACT/SAT prep courses; and allowing students to take extra classes to graduate sooner or catch up.

The bus passes that students were issued can be used in the evenings and on weekends without any additional cost. This means schools can host activities at these times and students have an easier time getting there.

Fayette County, Kentucky

53 Schools • 32,000 Students
Before: High School-7:30 am

After: Elementary School-7:30/8:00 am,
High School-8:30 am,

Summary

Fayette County, while eventually successful in achieving the late start, took one of the most difficult approaches to getting it adopted. They also eventually saw great results from their change, but because of the high emotional and political nature of the process for achieving the change, there were very vocal opponents for a long time after the change as well.

Profile

Fayette County, Kentucky is a large suburban district that houses over 32,000 students and five high schools. It confronted the issue of school start times when its school board decided to make the high school start even earlier. The resistance to this change initiated a two-year battle between parents to convince the school board of their position on start times. Finally, the board was convinced to delay the start by one hour, and Fayette experienced positive results. Fayette operates on a 4-tier bus system, with elementary schools split into two groups.

Challenge

Fayette County was one of the first to take on the issue of later school start times. While the sleep field had already proven that learning was impaired by sleep deprivation and that later starts would benefit students, there was little direct evidence of the success of such a change. Therefore, little but the heated emotions of the participants backed the discussion that took place. This chaotic and passionate approach to the problem was one of their biggest challenges.

Of course, Fayette County faced other, more tangible challenges. These included transportation scheduling, limited time for extracurriculars and after-school jobs, and childcare for younger students. The most vocal opponents to the late start were the parents of younger children who would lose their supervision after school.

Champions

There was a small, but very vocal group of parents who noticed the school board's plan to shift the high school to an earlier start, and were not at all pleased. This group, armed with some of the biological research on sleep and learning, confronted the school board and remained the party which advocated for later starts over the next two years. They were, however, unorganized and had little involvement in the issue other than attending school board meetings to voice their opinions.

Journey

As the result of the addition of a new Magnet school to the Fayette County Public Schools, the school board in 1996 was forced to reconsider the bus schedules. When they announced the plan to shift the high school start times to 7:15 am, 15 minutes *earlier* than the previous start time, a small group of parents was outraged. This group took their concerns to the next school board meeting, where they presented some of the research showing that this was exactly the wrong direction to be going. The board was sympathetic to these arguments, and decided to revisit the whole issue of scheduling school start times, and to do some research of their own.

Then, without consulting any of the other stakeholders, the board too quickly announced their new plan to shift the high school to a delayed start. There was furious opposition to this pronouncement. Coaches, students and parents involved in any sport in town were concerned that they would lose practice time and space.

A much larger group of parents than the original group came out against the change, mostly because of the difficulties they would then face finding childcare for their younger children. What the school board and the original protestors had not realized was that everything in the community revolved around the school schedule, and many people were concerned about this change!

Unfortunately, due to previous bad decisions and secretive dealings by the school board, the people of Fayette County were already suspicious of this group. This did not help in the process over school start times. Over the next year and a half, the school board switched its position on the start times at every single meeting. The parents in Fayette, unfortunately, approached the issue mostly from an emotional standpoint, and the two sides were never able to engage in a rational dialogue about the possible outcomes. There were no polls taken, no committees formed, no consultation with principals or teachers. They were also tackling this issue so early that they did not benefit from much of the research which has since been published to support the change and to reassure those opposed that the negative effects are minimal.

Eventually, at one meeting, the principal of one of the high schools attended to present his point of view on the issue. He had polled his students and found that they were split evenly on whether they even wanted the change. This principal argued that if the students themselves weren't clamoring for the change there was no reason to make it. In addition, this principal argued that from his knowledge of teens, they would just abuse the extra time anyway and stay up later. One parent who was advocating for the later start also happened to be a scientist whose interests were in the area of sleep. He suggested, in response to this principal, that no matter what decision was made, many people were going to be unhappy. But if they did make the change, they should be sure to collect data both before and after so they could get a better understanding of how this really worked. The superintendent agreed.

Finally, the board made its decision, mostly because of exhaustion with the process. They decided to delay start times for the adolescents, both middle and high school. And that parent who had spoken up did implement a research project to study the impact of the late start.

Solution

Fayette County's final decision was a compromise. The advocates of a later start wanted all students to benefit. Although younger students can handle an early start from a biological standpoint, the logistics of getting the youngsters to school early were not appealing. But the School Board's final plan was a flip between the elementary and high schools. The start times are now as follows: 7:30/8:00 am for elementary, 8:30 am for high school, and 9:00 am for middle school.

Implementation

The most important aspect of Fayette County's implementation plan was time. The decision to make the change occurred fully 10 months before the implementation was to occur. This was essential, because every- one had plenty of time to make arrangements for the new schedule. Of course there were a few bugs the first few days and weeks of the change, especially with the buses, but overall the transition was extremely smooth. People made the necessary adjustments and moved on with their lives.

Results

Now, seven years after the change, you would have a hard time getting Fayette County to go back. Everyone has adjusted to the different routines, and the students and parents appreciate the more healthy approach to education.

The results of the studies that were done both before and after the change were encouraging. Students in every grade from 6-12 averaged more sleep in the year after the change, up to 50 extra minutes in the 12th grade. The percent of high school students getting at least eight hours of sleep per night went from 21%-51%. This study also looked at the rate of traffic accidents in the school system before and after the change to a later start. While the statewide rate of crashes increased 8% over the two years after the change, Fayette County, which was previously one of the counties with the highest crash rates, reduced its crashes by over 15%.

Jessamine County, Kentucky

11 Schools • 7,000 Students
Before: High School-7:30 am,
Middle School-7:40 am,
Elementary School-8:30 am
After: Elementary School-8:00 am,
High School-8:40 am,
Middle School-8:50 am

Summary

Jessamine County is a great example of how to change school start times. Benefiting from the experience of a neighboring community, Jessamine took their time and organized their efforts in such a way as to transition smoothly into a new schedule for their students. The community, especially the teachers, was supportive of the proposed change, and has seen positive results.

Profile

Jessamine County is a rural community with a school system that serves 6,000 students. The main challenge that Jessamine County faced was responding to a very vocal group of parents who opposed the change for personal reasons (scheduling, effect on other kids, athletics, etc). Before the change, the district ran bus tiers by level (High School and Middle School, Elementary School), and classes started at 7:30, 7:40, and 8:30 am, respectively. There is also an Early Learning Village for Pre-K and kindergartners that had an independent bus run.

Challenge

Jessamine County's major challenge was to achieve a balance between meeting the needs of individual students and parents while attending to the greater needs of the entire student body. Jessamine worked hard to educate the community and to involve everyone in the decision-making process so that people understood the issue and that everyone's concerns could be addressed. Even with all of their efforts, Jessamine faced a vocal opposition group.

Champions

The superintendent of the Jessamine County Schools, Linda France, was aware of the literature about the impact of school start times on student health and learning. She was also connected to the process of changing start times in neighboring Fayette County. France initiated and supported the discussion of reconsidering Jessamine County's bell schedule. France commissioned a committee on the subject. It was made up of 12 members, with a representative from each school. This committee reviewed various sources of material on the issue, surveyed important stakeholders, and finally presented a recommendation to the school board to change the bell schedule.

Journey

Linda France understood from the experience in Fayette County that the approach to the subject of school starting times would be the most important factor, even more important than the supporting data, in getting a change passed. Participants in the debate in Fayette County advised Ms. France and Jessamine County to take their time in reviewing the issue and pro- posing a change. Ms. France knew that it would be important to keep both the decision makers and the community well informed at every step of the process. The committee began in January by reviewing the literature on adolescent sleep and school start times. They also requested information from nearby districts in central Kentucky about their start and end times by level.

This information pointed out that Jessamine County had earlier start times for the high school by at least 25 minutes. This preliminary information was presented to the school board. The committee then requested and received approval to administer a survey to high school students regarding their sleep habits and schedule preferences. They designed the survey using a combination of the *School Sleep Habits Survey* (Bradley Hospital/Brown University Sleep Research Lab) and the *Fayette County Sleep and School Survey*. The data from these surveys, which were completed by almost 1,100 students, was tabulated by high school math students and then presented to the school board. The results showed that students were not getting enough sleep and that most students felt they could do better work if they started school later.

The community began to get involved in the process as a result of local media coverage. Articles ran in sever- al local papers and gave a background of the issue and the research supporting a later start for middle school and high school students.

Soon afterwards, the district staff shared the committee's work with the school board. The school board then requested that the committee design a survey to be administered to both certified and classified staff. The results were presented to the school board at their meeting in May. At this point, the board recognized that it would be important to continue studying the issue, but asked that a recommendation be made early enough in the next school year that the community would have enough time to prepare for the change.

The committee spent the summer preparing a survey for parents to be administered at the beginning of the school year. The committee chairperson also worked with Superintendent France to make arrangements for community forums to be held in the fall. France focused her summer newsletter on the issue.

Students were involved in the process in several ways in the fall. Math classes used and studied the data from the surveys while learning about graphing and other mathematical operations. Elementary gifted students wrote letters and persuasive essays regarding the issue. Three community forums were held in November.

These were widely publicized in the schools, in the community newspapers and on the Web. Each forum consisted of a viewing of a short video on the basics of sleep, an overview of the national research on sleep and start times and local survey results, followed by a discussion. Each forum was attended by about 25 parents, which was less participation than had been hoped for, but seemed consistent with similar events in other districts.

The committee presented all of their findings and a recommendation for a change in start time to the board in February. The committee found that they had given ample time and opportunity for all stakeholders to be involved in the process, and that they were prepared to monitor the implementation and respond to unforeseen difficulties.

Solution

The board adopted the recommended schedule to be implemented for the following school year:

Elementary School: 8:00 am - 2:45 pm

Middle School: 8:50 am - 3:35 pm

High School: 8:40 am - 3:25 pm

Implementation

The implementation of the change was very smooth. Because Jessamine took their time in studying the issue and included all important decision makers in the process (including transportation directors), the changes were made easily and with little opposition. No addition- al drivers were required to make the transportation work. The only complaints were about childcare for younger students. The local YMCA responded by offering before- school care for middle school students who now had the latest start times.

Results

Jessamine County parents and students were very accepting of the results of the change. There were very few complaints about the change, and few problems with the transportation situation.

Communication was maintained with the community to ensure a smooth transition. This effort included opening a hotline for questions, but it was very little used because the change was already communicated so well.

Wilton, Connecticut

5 Schools • 4,300 Students

Before: Grades 6-12: 7:35 am,

Grades 3-5: 8:15 am

After: Grades 3-5: 7:35 am,

Summary

Wilton, a small suburban community, made the change to a later start time for its middle and high school students through the efforts of its League of Women Voters (LWV). After a two-year process, focused mainly on the issues of after-school activities and the concerns of parents of younger kids, Wilton got its change. The results have been impressive: students are getting more sleep and are healthier and happier.

Profile

Wilton, Connecticut is a suburban community in the southwest part of the state. The Wilton School District, which is run by a superintendent and a six member Board of Education, includes five schools: two buildings for grades K-2 housing a total of 990 students, grades 3-5 with 1,030 students, a middle school of 1,000 students and the high school of 1,230 students, giving the district a total of about 4,300 students. Prior to the change, the district ran a three-tiered bus system, with grades 6-12 starting at 7:35 am, grades 3-5 at 8:15 am and grades K-2 at 9:00 am. The middle and high schools operate on an 8-period schedule, and the start time change had no effect on the total instruction time of the students. The district receives almost 100% of its budget from town funds, and little from the State of Connecticut.

Challenge

Wilton faced two main challenges in proposing a change in start times. First, Wilton is a self-described "sports town." The Wilton Sports Council, a body representing the interests of the little league, soccer clubs and other private sports organizations, was a tough opponent to the

change. They insisted that any change in start times would lead to the expulsion of Wilton teams from the athletic conference, a price too high to pay for any other possible benefit. Second, there were reservations raised by the parents of younger children, who would not reap the benefits of changing starting times, especially if their children now would have to arrive earlier.

In addition, like most other school districts in the country, Wilton's budget was tight and they therefore had to consider options to change start times that would introduce little cost. Luckily, Wilton's high school and middle school were already on the same daily schedule and could be considered a transportation unit. Therefore, cost effective options were easier to find.

Champions

The Wilton League of Women Voters (WLWV) led the effort for a later start time for Wilton's teenagers. The WLWV initiated a research and study project in the Wilton community, which eventually provided the impetus towards the change. Because their efforts in Wilton, CT have been so successful, the WLWV has since traveled around the state to present their findings and encourage other districts to follow their lead. They have, in fact, been instrumental in supporting the Greater Hartford LWV in its efforts for change in West Hartford, CT.

The WLWV's role in the process was to gather and coordinate information on the subject, and to be advocates for the change. They understood from the beginning that it was the Board of Education and the superintendent that would have to approve and implement the change. However, the WLWV provided an important component of this process: the blueprint for raising community awareness. Their plan included an identification of the goals of the change, an identification of pertinent organizations that would need to be involved in the process, a designation of their group as the coalition builder of groups larger than the school community, and finally a map for educating the community about the issue.

Journey

The Seeds:

Wilton first encountered the issue of later school start times when then Connecticut Senate President Kevin Sullivan gave a presentation on the issue to the WLWV in October 2001. In response to this, the WLWV assembled a committee to investigate the issue and write a report on

their findings. This group spent six months reviewing the research and other literature on the subject, interviewing experts, and talking with the Edina, Minnesota school district about their experience with the change in start times. In the spring of 2002, the WLWV presented their advocacy position in support of delayed start times, and later published the study group report (available on the Web at www.lwvct.org/wilton). The WLWV invited the superintendent and the Board of Education to attend this presentation. The superintendent was receptive to considering this recommendation, and after conducting some research of his own, was convinced of its merits. Several of the Board members were also part of the WLWV, so the administration was supportive from the early moments of the effort for change.

Public Involvement:

The next step for the WLWV was to garner as much support as possible for this issue through educating the public. The group brought their findings to any group that would listen to them, focusing on PTA meetings, school advisory groups, and other citizen organizations. The WLWV understood from their research that it would be imperative to conduct a survey of both the students and the staff and to include their input in designing a proposal to change the start times. This survey was administered by the Norwalk Hospital Center for Sleep Disorders with the help of the Wilton High School Student Government in the spring of 2002. The survey was sent home with students or mailed home, and was available on the school district Web site. The results, once tabulated, were also available on the Web site.

During this time, the Wilton Education Foundation sponsored a "Community Conversation" entitled "Wilton's Youth Under Pressure" to provide an opportunity for the entire community to discuss the issue. The Connecticut Thoracic Society convened a task force made up of the WLWV and the Connecticut PTA to dis- cuss strategies for raising awareness and advocating for later school start times. Wilton's strategy was to inform as many people as possible about the details of the sleep research that supported their efforts to change school start times.

The Administration Gets Involved:

In a public meeting in January 2003, Wilton's superintendent announced his intention to implement a later start time for adolescents and that he was considering various options on exactly how to do so. The WLWV recognized that their role should remain as public awareness coordinators, and that the detailed logistics should be left to the school administration to determine. The superintendent became the driving force behind this portion of the process. The Wilton PTSA also held a forum as an opportunity for parents to have their questions answered and to voice their concerns. The major apprehensions that the parents expressed at this meeting were the adverse effects the change would have on the athletic program and the impact on the younger children. As a result of this meeting, the superintendent discussed the issue with the athletic conference chair, who agreed on the importance of the change and assured Wilton every effort would be made to accommodate their schedule and that they would not be removed from the conference. The superintendent also realized that the change in start times could not involve the K-2 students. Finally, he promised that no student would board a bus before 7:00 am.

The Change:

Finally, in April 2003, the superintendent sent his proposed start times to the staff and the PTA for review. While response to the proposal was mixed, the superintendent decided to go ahead and present it to the Board of Education. He arranged to have several medical professionals attend the Board of Education meeting in order to answer any questions about the biological aspects of the issue. By May 2003, the board voted to approve the change in start times.

Solution

The Wilton School District maintained its three-tiered start schedule, and achieved a more appropriate starting time for teenagers by flipping the upper elementary start, at 8:15 am, with the middle school/high school start, at 7:35 am. The adolescents gained 40 minutes of time in the morning for sleep.

Implementation

The new schedule was implemented in the fall of 2003. The WLWV and the Wilton Board of Education agreed to review the status of the start time change annually until they could do an extensive and in-depth study after three years. Because Wilton's new schedule did not involve leasing any new buses, the implementation process was made simpler for the administration, and parents and students reported an adjustment period of only about two months to the new schedules. Wilton's efforts were also featured in local press, as well as such national outlets as the *New York Times*, and NBC's *The Today Show*.

Results

Wilton's start time change was a resounding success. Teachers recognized a change in student behavior: they were more awake, had better attitudes and were over- all more pleasant. Parents also reported changes in their kids' attitudes, and became increasingly supportive as they adjusted to the new routines.

Teachers who also coached at the schools were concerned before the change that they would be unable to make it to practices, but this turned out not to be a problem. Wilton High School had one of its best athletic seasons, even earning several state championships. The high school athletic programs saw a continued rise in participation. Even the 3-5 grade- school participation increased in extra-curricular activities. The only problems were for students who had to be pulled out of class early for away games, and for students who participated in more than one sport, although this full schedule would be difficult with any school start time.

Wilton did not see any change in attendance or tardiness.

The three impacted schools — middle, high and upper elementary – participated in a survey initiated by the Parent Teacher Student Association that was presented to the Board of Education at the end of the first year of the new schedule. Large majorities at all three schools reported satisfaction with the change. The following fall, the local sleep disorders center administered a sleep survey in the high school, with results showing that the students were, in fact, sleeping an extra hour each morning.

The WLWV has also maintained an Internet-based message board for ongoing questions,

comments and concerns about the change of start times. They have held several public hearings and town forums to allow discussion of these comments.

The Norwalk Hospital Sleep Disorders Center, which conducted the sleep study before the change, continued with a follow up survey to assess the impact. They used a truncated version of the self-administered School Sleep Habits Questionnaire, which asked questions about sleep, sleepiness and grades. The results have shown that Wilton High School students are getting 35 minutes more sleep than before the change. The number of students who reported that daytime sleepiness was not a problem doubled. Their bedtimes did not change. There was even a trend towards improved grades, but this is hard to measure, especially in a district with already high-achieving students.

Contact

Wilton would love to provide any help they can to promote this change elsewhere. Please contact: Susan Bruschi, the chair of the Wilton Board of Education and former board member of the WLWV, at sabcrb@optonline.net, Carole Kleinfeld, current board member of the WLWV, at ctyk@optonline.net, or Lisa Bogan, current Board of Education Member and WLWV board member, at elmb@optonline.net.

Reformatted from: www.startschoollater.net/case-studies.html