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ENGL 1001 Sec: 26

24 November 2019

Sleeping In: The Case For Delayed School Start Times

On November 1, 2019, California's Governor, Gavin Newsom, implemented a new law that required California high schools to start at 8:30 a.m. or later (Hauser and Kwai). The *New York Times* reported that "The passage of the law followed years of mounting calls for later school start times from sleep experts who said such a move would optimize learning, reduce tardiness and contribute to a student's overall well-being" (Hauser and Kwai). The law has garnered support from sleep experts, teachers, and students. California student, Libby Vastano, says she thinks that the delayed school start time will help reduce the massive sleep deficit she has noticed in her classmates. For her, seeing sleep deprived classmates is commonplace (Hauser and Kwai). Stanford medical professor, Dr. Sumit Bhargava, says that California's new law will cause students to get more sleep, helping to prevent future diseases (Hauser and Kwai). He says that the delayed school start time will impact students long into their adult lives and improve their mental health and alertness in the short term (Hauser and Kwai). Indiana University medical professor, Aaron E. Carroll, argued in a *New York Times* opinion piece, that early school start times do not teach students to be more responsible as they become an adult. Carroll says his son leads a balanced social and academic life but stresses that it is near impossible to get the recommended hours of sleep that he needs due to his early school start times (Carroll). Carroll explains,

> My oldest child, Jacob, is in 10th grade. He plays on the junior varsity tennis team, but his life isn't consumed by too many extracurricular activities. He's a hard worker, and he spends a fair amount of time each evening doing homework. I think most nights he's probably asleep by 10 or 10:30. His school bus picks him up at 6:40 a.m. To catch it, he needs to wake up not long after 6. Nine hours of sleep is a pipe dream, let alone 10 (Carroll).

This perspective from a medical professional provides insight into a parent who has witnessed firsthand the effect an early school start time has on their student. Moreover, Carroll's son isn't alone in his struggle with early bus schedules and school start times. Unlike California, the vast majority of schools do not start school after 8:30 (Hauser and Kwai). When last reported by the Center for Disease Control and Prevention, only ten percent of schools implemented this delayed school start time of 8:30 (C.D.C qtd. in Hauser and Kwai).

Analyzing the positive outcomes of the recent California school start time law can strengthen the fact that delaying school start times is both necessary and logistically possible; however, other evidence is needed to show that implementing a delayed school start time is worth it. Today, a significant amount of evidence exists that should be the impetus for school districts to implement a delayed school start time. The recommendations of medical organizations, and countless studies, prove that delayed school start times allow students to receive increased sleep, exhibit better academic performance, and make a positive contribution to the economy.

Advocates like Carroll argue that delayed school start times will cause students to receive more sleep. Sleep deprivation has a myriad of unwanted effects that negatively impact students

in school and cause them to be emotionally unstable. This claim is supported by a comprehensive review written about previous studies that analyzed the impact of a delayed school start time (Minges and Redeker 87). In their review, Yale medical professors, Karl E. Minges, and Nancy S. Redeker emphasize the importance of sleep for students, arguing that,

> Adolescents who are chronically sleep restricted perform academically poorer in morning classes and in overall performance, have increased absenteeism and tardiness, and a decreased ability to learn and retain material, actively participate in class, and perform decision-making tasks. Furthermore, sleep compromised adolescents are also more likely to be depressed, anxious, irritable, defiant, apathetic, and impulsive than adolescents who achieve optimal sleep. (Minges and Redeker 87)

These effects have been supported by numerous credible institutions such as the American Academy of Pediatrics. In an American Academy of Pediatrics policy statement, lead author Dr. Judith Owens, states that a lack of sleep hampers a student's academic productivity (643). Owens says that "Many studies show an association between decreased sleep duration and lower academic achievement" (643). The extensive list of attributes seen in sleep deprived students reinforces the argument that they may need to sleep in longer each morning in order to improve their health and academic capabilities.

Even burdened with the troubling evidence about the consequences of sleep deprivation, it must be demonstrated that a sleep crisis is common in order to constitute a change dramatic as moving a school district's start time forward. The majority of adolescents do not receive enough sleep. The American Academy of Pediatrics writes that "87% of high school students in the United States are getting less than the recommended 8.5 to 9.5 hours of sleep on school nights"

(643). Even more concerning is the fact that over two-thirds of parents were satisfied with the amount of sleep their children received (Owens 643). In their systematic review, Minges and Redeker similarly reported that "only one in 10 adolescents" were receiving the amount of sleep consistent with medical guidelines (86). By addressing the rampant sleep epidemic among adolescents, these statistics shed light on the urgent need for a solution. If a delayed school start time could be proven to result in longer sleep, it would be a remedy for this sleep epidemic, allowing adolescents to get the amount of sleep they need to function at their fullest potential.

Some parents and school administrators argue that delaying school start times might not be the best option to ensure adolescents receive enough sleep. An op-ed presented to the West Hartford Connecticut school district, written by parent Doug Mantz et al., and dozens of other community members, argued that there were more significant problems that contributed to adolescent sleep loss. They contended that "busy schedules and the overuse of phones, tablets, computers, video games and television have as much, if not more, negative impact on our teenagers' sleep schedules than the time at which school begins" (Mantz et al). This is not entirely the case.

While increased screen time and late-night study sessions may play a role in the amount of sleep a student receives, the American Academy of Pediatrics suggests that adolescents do not have complete control over their sleep habits. Adolescent's bodies are wired to operate on a different sleep schedule, causing them to go to bed later (Owens 642). This sleep pattern in adolescents is biological, and not a result of controllable factors (Owens 642). The American Academy of Pediatrics writes, "One factor is delayed timing of nocturnal melatonin secretion across adolescence that parallels a shift in circadian phase preference from more 'morning' type to more 'evening' type, which consequently results in difficulty falling asleep at an earlier

bedtime" (Owens 642). Furthermore, The American Academy of Pediatrics says that adolescents experience an "altered 'sleep drive' across adolescence, in which the pressure to fall asleep accumulates more slowly" (Owens 642). In short, adolescents do not have complete control of their sleep habits, much of which is determined by biological changes (Owens 642). This evidence suggests that the school start time delay should be implemented to allow students the sleep they need to adjust to the biological sleep changes they experience as adolescents.

Given the overwhelming sleep deficiencies in adolescents, possible solutions must be discussed, as sleep deficient students are more likely to experience adverse effects that hurt them in all aspects of their lives. Excessive screen time is a possible reason for this sleep deficiency. Although this argument identifies a likely cause for sleep loss in adolescents, it doesn't address the biological component which shows that adolescents are biologically prone to go to sleep later. It follows that delaying school start times would be a viable solution to ensure that adolescents can sleep in and get the sleep they need to be healthy and perform well in school. School start times have not been widely implemented. Nevertheless, enough school districts have adopted a delayed school start time to provide researchers the capability to study the effects it had on students in school.

Peabody Award winner, and NPR health contributor, Patti Neighmond, reported that a few years ago, Seattle delayed their school start times by an hour, beginning school at 8:45. She says that although the initial implementation proved challenging, adolescents affected by the change were able to get more sleep (Neighmond). "This was no easy feat," Neighmond explained, "It meant rescheduling extracurricular activities and bus routes. But the bottom-line goal was met: Teenagers used the extra time to sleep in" (Neighmond). Neighmond was citing a study published in the journal, *Science Advances* (Neighmond). This study analyzes the effects of Seattle's newly

implemented delayed school start time and concludes that students saw their sleep increase by thirty-four minutes (Neighmond). The study's author, Horacio de la Iglesi, argues that a delayed school start time will especially benefit teens (qtd. in Neighmond). He says teens operate on a different sleep schedule than everyone else, often not falling asleep until midnight (Neighmond). In his opinion, "To ask a teen to be up and alert at 7:30 a.m. is like asking an adult to be active and alert at 5:30 a.m.," (qtd. in Neighmond).

The research methods used for the Seattle study seem more credible than previous studies that used surveys and other less effective ways to collect data. In the Seattle study, students were selected from two different schools, and wrist monitors were used to track each student's sleep cycle (Neighmond). The study found that "Bedtimes stayed relatively constant and kids caught some extra sleep in the mornings" (Neighmond). This finding refutes the claim that if students are given a later school start time, they will go to bed later (Neighmond). In the study's two test groups, who participated in the same biology class at different times, there was a 4.5 percent spike in grades for the students with the delayed school start time (Neighmond). Seattle schoolteachers noticed these academic improvements. Biology teacher Cindy Jatul says she detected a positive difference in the attendance, and alertness in her students when they moved to a later start time. Similarly, another Seattle science teacher, A.J Katzaroff claimed that the delayed school start time helped her students more awake, alert, and ready to interact with her subject matter, saying that "Some of the best practices in science education have students talk, discuss and investigate together and those are all very hard when the brain is not fully powered" (Neighmond).

The Seattle study is far from an outlier. The systematic review of school start time research compiled by Minges and Redeker revealed similar results (Minges and Redeker 87). Their study began with 1035 articles, with Minges and Redeker gradually eliminating argues based on criteria

that did not meet their criteria or were “duplicates” (Minges and Redeker). When their systematic review concluded, Minges and Redeker reported that "There was a significant positive net change in all studies, indicating an increase in the total minutes of sleep"(87). Moreover, they found that this change was significant, writing that "The net increase ranged from an additional 25 minutes to 77 minutes of sleep per weeknight"(Minges and Redeker 87). By combining the results of so many studies Minges and Redeker reinforce the idea that delayed school start times result in adolescents receiving significantly more sleep each school night.

In addition to connecting school start times with improved sleep, Minges and Redeker were able to establish a trend in their studies that showed “decreases in the depression scale, depressed mood score, and proportion of students who were irritated or annoyed” (93). The academic effects of delayed school start times have also been studied. In a study conducted by Jeffrey Groen and Sabrina Pabilonia from the US Bureau of Labor Statistics, they claimed that "We find that an extra hour of sleep on a weekday leads to a 0.36 standard deviation increase in the broad reading test score for female students. Overall, these results imply that the female students who are getting more sleep when schools start later are the ones who benefit in terms of higher test scores (Groen and Pablionia 214).

Groen and Pablionia did not find that students went to bed earlier but instead slept in later due to the delayed start time (214). However, they did find that students would "nap less during the daytime" (Groen and Pablionia 214). Regardless of whether this extra sleep is obtained by going to bed earlier, or sleeping in, Groen and Pablionia emphasize that females, who received extra sleep, received higher test scores, while males who experienced less change in their sleep habits, saw no effect on their test scores, continually stressing that sleep and test scores are directly linked. (214). While this evidence suggests that males may not fully be taking advantage of the

benefits of a delayed school start time, this can be remedied by increased discipline by parents to ensure their students reap the health and educational benefits of a delayed school start time. The evidence linking sleep academic achievement should be the impetus for parents to make sure their children utilize their delayed school start time to sleep in.

Students will inevitably have responsibilities after school ends. Many students could be reliant on jobs to provide for them and their families. By the same token, students may participate in after school clubs or sports. Previously mentioned Aaron E. Caroll argues it is the early school start time that causes his son to receive insufficient sleep, not his extracurricular activities. He says it is a natural tendency for teens to want to "go to bed later and sleep later," and it is the early school start time which prohibits him from getting the sleep he needs (Carroll). Carrol's claim is backed up by evidence from the American Academy of pediatrics, which says that students tend to go to bed later- something caused by biological changes, not social factors such as homework or after school activities (Owens 642).

Regardless, it is crucial to ensure that a delayed school start time would not drastically interfere with students' after school activities or employment. While not all of the studies compiled by Minges and Redeker measured the change in a student's participation in extracurricular activities, their job, and other social activities, the ones they did find determined that these activities were not affected by the delayed school start time (Minges and Redeker 93). Moreover, Groen and Pablionia concluded that "With later start times, students are not any more or less likely to hold a job or spend time at work" (215). For many students who rely heavily on their jobs, being mindful of their commonly hectic work schedule is certainly apropos. These results show that a delayed school start time does not affect a student's job, supporting the claim that it is possible to have a delayed school start time without severely compromising a student's work

schedule. Groen and Pablionia's study also found that when delayed school start times were implemented, female students increased the amount of time they dedicated to sports after school, running counterintuitive to the suggestion that delayed school start times negatively affect after school activities (213). Finally, Groen's study showed that when a delayed school start time was implemented, student's spent "Less time watching TV and playing computer games (screen time) when school starts later (54 min less for one-hour delayed start time) but more time on personal care" (Groen 213). While other factors may certainly aid in reducing a student's screen time, the significant near hour delay described by Groen suggests that school start times may result in screen time reduction for adolescents, something that rarely happens in today's digital age.

Delaying a school start time certainly has logistical and economic implications. Carrol acknowledges as much in his *New York Times* opinion piece, where he illustrates that a delayed school start time could have a significant impact on a school's transportation system (Carroll). Carroll explains that "Our local school system, like many others, uses the same buses for elementary, middle, and high school. Not wanting to start elementary school too early, it starts high school earlier to save money on transportation". Many lower-income school districts likely have limited methods of transportation for their students, so it must be determined if the benefits of a delayed school start time outweigh the initial costs that stem from transportation needs and other expenses.

While the paramount reason for delaying school start times should be to improve student's sleep, there is evidence that shows a long-term economic gain for school districts. Groen suggests that at the very least, the costs that result from a delayed school start time were relatively insignificant, especially when compared to other typical school expenditures (Groen and Pablionia 214). Groen argues that "The effect is very similar in size to the effect of reducing class size from

22 students to 15 students in grades K–3, though the estimated costs of adjusting school start time are less than the estimated costs of reducing class size”(214). These results show that the cost of a school start time is not significant, especially when the outcome of a delayed school start time could result in students achieving higher academically, consequently increasing a school's reputation.

The American Academy of Pediatrics admits that while delayed school start times could initially have a negative economic impact on a school, "because the appropriation of federal dollars for schools is partially dependent on student attendance data, reducing tardiness and absenteeism levels could result in increased funding and further offset costs related to moving start times later" (Owens 647). Similarly, Minges and Redeker propose that delayed school start times may inadvertently have a positive economic effect on school districts, saying that

> Since students' academic success, and public school funding, is often predicated on grades and standardized testing scores, and non-experimental studies provide initial evidence that adolescents with better grades have a longer sleep duration, the importance of testing these outcomes in future studies cannot be overstated. (Minges and Redeker 93)

The nonprofit research institution, the RAND Corporation, conducted a study that analyzed the economic implications when a school delayed its start time (Hafner et al. 3). The study’s lead author, Economist Marcos Halfner, wrote that "The study estimates changes in the economic performance of 47 U.S. states following a delayed school start time, which includes the benefits of higher academic performance of students and reduced car crash rate” (Hafner et al. 3).

Halfner et al. summarized, “Even after just two years, the study projects an economic gain of $8.6 billion to the U.S. economy, which would already outweigh the costs per student from

delaying school start times to 8:30 a.m" (Hefner et al. 3). This study suggests that there is an economic incentive for implementing delayed school start times. While opponents of delayed school start times can correctly argue that school districts will suffer additional expenditures the evidence presented here strongly refutes the claim that these initial economic downsides will have a negative long-term impact. As the study's authors explain, the financial benefit of delayed school start times is mostly a result of a student doing better at school and being more alert on the road (Hefner et al. 3). These two effects are due to the increased sleep a student will receive as a result of a delayed school start time (Hefner et al. 3). Provided that this train of thought will be continued to be supported by further studies, the RAND corporation presents a strong argument that the positive effects gained from a delayed school start time could result in a positive long-term economic impact.

Many adolescents today must deal with the adverse effects of a lack of sleep. Sleep affects a student's wellness and performance in school. There are undoubtedly many ways to help adolescents get the amount of sleep they need. However, delaying school start times are the most impactful way to cure this sleep epidemic. In addition, school start times will help students perform better in school and make a positive impact on the economy. School districts should recognize that their student's health and preparedness for school should be their priority. Any minor logistical downsides to a delayed school start time pale in comparison to the health, academic, and economic benefits. Ultimately, delayed school start times should be a mandatory requirement for public school districts. Adolescents are in the midst of a sleep crisis, and delayed school start times are the cure.

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