

PASD Community Approach to Achieve More Student Sleep

Presented by the PAEA to the Board of School Directors on November 13, 2018 --
Summary

Goal of PAEA Presentation

Provide research for a delayed start of 20 to 30 minutes coupled with better sleep habits shows how to best practically apply the data shown for circadian rhythms with minimal impact on the community, extracurricular activities/sports, and instruction. We have incorporated this into our proposal while exceeding the recommended 30 minute delay and the national average for school start time.

Concerns from 10/30/18 our Proposal Addresses

- It was very clear that both the Board and committee had concerns with PASD's current start time as well as PAEA's first proposal.
- National start time average of 8:03 seemed a priority to be reached by PASD as a result of the board's questioning of the committee.
- High School PDT seemed to be preferred at end of day to ease academic impact on our athletes.
- Preservation of as many extra curricular activities both before and after school.
- Bus issues: K – 12 on same bus, cost of transportation to PASD and its taxpayers (1st option was minimum \$1.5 million), and impact on driver availability.

4-Pronged Approach:

- Committee's role: Health and well being of students.
- Teachers' role: Later start time coupled with the preservation of extracurricular activities for a well rounded student experience at PASD.
- Administration role: Adjusted bell schedule.
- Parent/student role: Healthier sleep habits and routines.

Impact on Community

CONCERNS RESEARCHED BY CHILD CARE COMMITTEE

- Availability for parents to find adequate means of child care both before and after school.
- The committee has looked into the impact on potentially flipping elementary and secondary times or large extensions to current end time ---can YMCA and other child-care providers handle the potentially larger enrollment numbers for community members? Loss of older sibling(s) as primary care taker for younger child(ren).
- Traffic pattern changes---increased volume during rush hour.

Impact to the Extracurricular Activities

SECONDARY ATHLETICS

(DURING SCHOOL, AFTER SCHOOL & EVENINGS)

- 50% of high school students play at least one sport.
- 60% of middle school students play at least one sport.
- The physical plant concerns of the secondary campus. Not every activity happens directly after school - and those that happen at the evening are going to be impacted as well by either limits on time or going later into the night. Double header games, senior nights, plays, musicals, concerts, etc.
- Compressed outside field time for fall/spring athletic activities due to only one lit field. This past fall's weather patterns made that even more challenging.
- Compressed practice time for Middle School & High School winter athletic activities due to only having two gyms on campus.
- Ability to maintain PIAA and PAC status as well as logistics of facilities being able to support Middle School Athletics.

Impact to the Extracurricular Activities

SECONDARY CLUBS & ACTIVITIES

(BEFORE AND AFTER SCHOOL)

- 560 High School students who participate in clubs or other extracurricular activities.
- Approximately 40 Middle School clubs that run after school.
- 240 Middle School students participating in activities before the start of school (Spartan Club, Bucket Band, Student Government, Archery, Jazz Band, Wind Ensemble).
- 2 Theatrical Productions and Vocal Ensemble account for an average of over 300 students annually.

ELEMENTARY MUSIC PROGRAMS

TIME	NUMBER OF STUDENTS	PROGRAM
7:30-8:30 (1X a wk. Varying days)	320	CHORUS (combined 3 schools)
7:30-8:30 (2X a wk.)	317	Band (SCH/B/MAN)
7:30-8:30 (1X a wk.)	280	Orchestra (SCH/B/MAN)

- 64% of PASD's enrollment in grades 3 thru 5 participate in these programs.
- The morning rehearsals are HALF of the music curriculum for those students.

ACADEMIC PROGRAMS

TIME	NUMBER OF STUDENTS	PROGRAM
3:30-4:30 (2X a wk.)	80+	Reading Club –4 schools
3:30-4:30 (2X a wk.)	80+	Math Club – 4 schools
3:30-4:30 (2X a wk.)	36	ELD Homework Club
7:30-8:15	20+ each school	READING OLYMPICS (SCH/B)

MUSICALS

TIME	NUMBER OF STUDENTS	ACTIVITY
7:45-8:30 (approx. 1 month)	120	MANAVON
3:30-5:00 (approx. 1 month)	110	SCHUYLKILL

ENRICHMENT ACTIVITIES/CLUBS

TIME	NUMBER OF STUDENTS	CLUB/ACTIVITY
8:00-8:30	25+ each school	K-KIDS (SCH)
8:00-8:30 & 3:30-4:30	25+ each school	K-KIDS (B)
3:30-4:45	20 each school	STRIDE (SCH/B)
3:30-4:45	20 each school	GIRLS ON THE RUN (SCH/B)
3:30-4:30	20 each school	CHESS CLUB
7:30-8:30	25	ART CLUB (SCH)

**Data to support a 20 to 30
minute delayed start to
school.**

Department of Health and Human Services Literature Review

Taken from:

J Sch Health. 2016 May ; 86(5): 363–381. doi:10.1111/josh.12388

Overview

- Overview of the literature review of 38 articles show:
 - Significant increase in sleep duration and quality with as little as a 20 minute delay in start time.
 - Improved attendance
 - Less tardiness
 - Less falling asleep in class
 - Better grades
 - Fewer motor vehicle crashes
 - There were a few studies the did not show these results

Summary of Results

- Of all studies presented in this literature review:
 - Almost all reported improved:
 - Sleep patterns and habits
 - Attentiveness in school
 - Improved attendance (including tardiness)
 - Improved overall mood
 - In our data, the more recent/current the study, the smaller the **p-value** (**$p < 0.001$ in most cases**)
 - What does this mean?
 - All hypothesis tests ultimately use a ***p-value*** to weigh the strength of the evidence (what the data are telling you about the population). The ***p-value*** is a number between 0 and 1 and interpreted in the following way: A small ***p-value***, typically ≤ 0.05 , indicates strong evidence against the null hypothesis, so you reject the null hypothesis.
 - 13 studies showed results on grades
 - **Only 54% reported statistically significant higher grades.**

Studies With A Modest Change To School Start Time

- Boergers, Gable, and Owens (2014)
 - **25 minute later start time**
 - Mean wake times (school days) were later ($p < .001$)
 - Mean school night sleep duration was longer ($p < .001$)
 - School night bedtimes did not change.
 - Percentage who slept ≥ 8 hour on school nights increased from 18% to 44% ($p < .001$).
 - No changes in non-school night sleep patterns
 - Sleepiness scores ($p < .001$)
 - Depression scores ($p < .001$)
 - Caffeine use decreased ($p < .05$).
 - No changes in number of hours engaged in athletics, extracurricular activities, and homework were reported.

Increased Quality of Sleep Research

Reasons For Insufficient Sleep

- Insufficient sleep due to a combination of late bedtimes and early rise times
 - Later bedtimes factors
 - Circadian rhythms
 - Increase in school work
 - After school activities
 - Employment
 - **Fewer parent-set bedtimes**
 - **Late night technology**
 - Rise times factor
 - Primarily school start times

Additional research (parent/student role)

ARTICLE #1 (November 2017)

- <https://www.sciencenewsforstudents.org/article/evening-screen-time-can-sabotage-sleep>
- **Synopsis:**
- The normal blue light emissions from the computer screen also affected how much of a sleep-related hormone each volunteer made. Called melatonin (Mel-ah-TOE-nin), it tends to make people feel sleepy. Our bodies usually secrete it into the blood around 9 p.m. When our bodies make less melatonin, we may still feel too alert at bedtime to fall asleep when the body is tired.
- **Using screens before bed damages the body's biological clock**, Green says. More and more people are using screens as kids and adolescents. At this age, their brains are still developing the ability to learn and pay attention. That makes the new results worrisome, Green says.
- Still, Rahman says the results remind us to think about how we use screens before bed. He recommends powering down electronics two hours before going to sleep. Read a book instead, he says. Talk with your family and friends. Write in a journal.

Additional research (parent/student role)

ARTICLE #2 (March 2018)

- <https://www.floridahospital.com/blog/secrets-sleep-part-3-how-screen-time-affects-our-zzzs>
- Synopsis: Research warning against bedtime screen usage is piling up faster than a teenager's text messages. In a 2015 study, device usage before bed was linked to a 13-52% spike in the likelihood of needing over 60 minutes to fall asleep. Dozens of others have found strong associations between screen time and both later bedtimes and less restful sleep.
- As bleary-eyed as blue light can make adults, its effects may be even worse in young people. For teens, whose circadian rhythms are undergoing natural shifts as they mature, blue light before bed makes things even more confusing for the body.
- **The RX:** put down those screens at least an hour before bed to properly prepare your brain for sleep.

Benefits of PAEA Proposal:

- Delayed start time exceeding the national average and is a 41 minute push.
- Minimal change to length of instructional time per period for student learning.
- Possibly flipping 7th and 8th period on a 6-day cycle addresses concern with athletes' early dismissals (HS and MS).
- There is a minimum of 5 common periods for decoupling with the High School and Middle School.
- Teachers would both be behind this proposal and publically support its implementation for 2019-2020 school year and administration has stated this is a viable plan.
- Preserves administration's ability to keep current scheduling needs.
- Flexibility in this proposed model allows for PASD to look into future scheduling options (online classes) in upcoming years without major changes to start/end times.
- Preserves current busing format while minimizing the costs associated with other options that were presented.

Examples of Possible Bell Schedules

- The following High School and Middle School schedules, along with adjusted Elementary times, are just one of many possible schedules that work within the Sleep Study Committee's 2nd option proposed to the School Board on 10/30/18.
- Administration and their delegated committees would create the final schedule.

Possible Schedule Compromise for Committee's 2nd option

Committee's Proposal:

Secondary times

T: 8:06 – 3:36

S: 8:10 – 3:21

Elementary times

T: 8:30 – 4:00

S: 9:00 – 3:45

Our Proposal:

Secondary times

T: 7:35 – 3:05

S: 8:05 – 3:00

Elementary times

T: 8:25 – 3:55

S: 8:55 – 3:40

- HS/MS would have identical schedule they do now just **41 minutes later** (see below)—keeps PDT at end of the day which helps alleviate early dismissal concerns for athletes.
- Puts us past the national average of 8:03, which was a major goal of the committee, and 5 minutes later than Unionville-Chadds Ford (they were a **25 minute push**, we are a **41 minute push**).
- Preserves most before and after school extracurricular activities.

High School

Teachers arrive 7:35

HR: 8:05 – 8:11

1: 8:11 – 8:55

2: 8:59 – 9:43

3: 9:47 – 10:31

4: 10:35 – 11:19

5: 11:23 – 12:07

6: 12:11 – 12:55

7: 12:59 – 1:43

8: 1:47 – 2:31

PDT: 2:35 – 3:05

Middle School

Teachers Arrive 7:35

HR:	8:05 – 8:11
1:	8:11 – 8:55
2:	8:58 – 9:42
3:	9:45 – 10:29
4 (Recap):	10:32 – 11:16

6th Grade Lunch

L:	11:19 – 11:49
5:	11:52 – 12:36
6:	12:39 – 1:23
7:	1:26 – 2:10
8:	2:13 – 2:57

7th Grade Lunch

5:	11:19 – 12:03
L:	12:06 – 12:36
6:	12:39 – 1:23

8th Grade Lunch

5:	11:19 – 12:03
6:	12:06 – 12:50
L:	12:53 – 1:23

Conclusion:

Our goal was to address the concerns of the committee for a delayed starting time while:

- Minimizing impact on the PASD community.
- Minimizing impact to extra-curricular activities/sports.
- Examining a delayed start to the school day.
- Increasing quality of sleep for students.