

More Sleep for a Healthier Student

A REPORT AND INITIAL RECOMMENDATION FROM THE RADNOR TOWNSHIP
SCHOOL DISTRICT ADOLESCENT SLEEP & SCHOOL START TIME COMMITTEE

Fall-Winter 2018-19

*This report is subject to change at any time based on ongoing discussions and investigation.
It is current as of Dec. 6, 2018.*



Introduction

The Radnor Township School District Adolescent Sleep and School Start Time Committee had four main purposes: understand the identified national public health issue of chronic sleep deprivation in adolescents and the contributing factors and consequences; educate the community on the topic; evaluate the impact on Radnor; and present a report and initial recommendation to district administration and, ultimately, the School Board.



OVERVIEW



IN THIS SECTION

1. Background
2. Committee Overview
3. Recommendation at a Glance

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In recent years, compelling scientific research¹ regarding the importance of sleep on adolescent health has earned deserved national attention.

The American Academy of Pediatrics, the Centers for Disease Control and Prevention, and the American Medical Association, among others, have issued policy statements recommending that adolescents get 8-10 hours of sleep each night and the secondary school day begin at 8:30 a.m. or later.

Since 2015, Radnor Township School District parents, staff and community members have been formally and informally reviewing the scientific research on adolescent sleep deprivation and its potential impact on Radnor students². Central to the discussions and studies has been exploring potential strategies to help adolescents get more sleep, one strategy being to delay the start of the school day.

Several school districts across Pennsylvania and more than 100 across the country have implemented a later high school start time as a result of the findings uncovered through their respective studies. As of November 2018, at least 20 school districts in suburban Philadelphia counties are actively engaged in similar discussions.

1. See Chapter 2, Section 1: The Science of Adolescent Sleep, pages 13-16
2. See Chapter 1, Section 3: Educating the Community, pages 8-11



Recognizing the need for Radnor Township School District to also formally investigate the issues of adolescent sleep and school start time, Superintendent Kenneth E. Batchelor officially named further study of these subjects a district “Priority Project” for the 2017-18 school year. To begin the study, a committee of various stakeholders in the district and Radnor Township was formed.

RTSD ADOLESCENT SLEEP & SCHOOL START TIME STUDY COMMITTEE

The Radnor Township School District Adolescent Sleep and School Start Time Committee was formed using the results of a survey³ open October 26 to November 8, 2017 and completed by approximately 500 community members. The survey sought feedback about adolescent sleep and school start time and provided respondents a chance to request to be considered for the committee. About 100 respondents expressed interest in serving on the committee.

Purpose of Committee

The RTSD Adolescent Sleep and School Start Time Committee was tasked with the following:

1. **Understand** the public health issue of chronic sleep deprivation in adolescents and the contributing factors and consequences
2. **Educate** the community on the topics of adolescent sleep and school start times

3. **Evaluate** the impact of adolescent sleep and a possible change in school start times on Radnor Township School District
4. **Report** on the initial recommendation to RTSD Administration, Superintendent, and School Board

Committee Members

The 38 committee members were chosen from 100+ applicants.⁴ Committee members met 13 times between November 2017 and May 2018. Detailed information regarding the work and progress of the committee can be found in Chapter 1, Section 2: “Timeline.”

Committee Recommendation

After more than a year of study, the RTSD Adolescent Sleep and School Start Time Committee offers an initial recommendation of a 55-minute delay in the start time at Radnor High School from 7:35 a.m. to 8:30 a.m. and a 37-minute extension to high school day from 2:27 p.m. to 3:04 p.m. The remaining 18 minutes of the school day would remain intact as a result of efficiencies to be implemented in the RHS schedule.

To achieve the morning delay at RHS, the start and end times at Ithan, Radnor and Wayne elementary schools would need to be delayed by 15 minutes -- from 9 a.m. to 9:15 a.m. and from 3:30 p.m. to 3:45 p.m. A new afternoon bus transportation model for Radnor Middle School and Radnor High School students would need to be implemented.

3. See www.RTSD.org/sleep

4. Adolescent Sleep and School Start Time Committee members were selected based on their responses indicating 1) they did not initially believe the science behind sleep; 2) they believed the science, but felt district operations need not change; or 3) they believed in the science and were interested in researching the logistics of a later school start time, its associated obstacles, and these obstacles’ solutions to these obstacles.

Initial Recommendation at a Glance

More About the Initial Recommendation and How it was Reached Beginning on Page 25.

8:30 a.m.-3:04 p.m.

Proposed New Start and End Times at Radnor High School

(Current Radnor High School Start and End Times: 7:35 a.m.-2:27 p.m.)

9:15 a.m.-3:45 p.m.

Proposed New Start and End Times at Ithan, Radnor & Wayne Elementary Schools

(Current Elementary School Start and End Times: 9 a.m.-3:30 p.m.)

PROPOSED NEW AFTERNOON BUS TRANSPORTATION MODEL*

For Radnor Middle School and Radnor High School

(Current Radnor Middle Start and End Times Remain As Is: 8 a.m.-3 p.m.,)

RECOMMENDATION OPPORTUNITIES

- No loss in instructional time at RHS
- May be able to use existing bus resources
- Minimal impact on community's usage of fields with continued support from RHS administration
- Minimal impact on RTSD-sponsored sports
- Fully addresses adolescent sleep needs

RECOMMENDATION CHALLENGES

- 15-minute later start & end times at ES level
- Earlier morning pick-up time for RMS students
- Private/special education school transportation logistics unknown at this time
- Traffic patterns around RHS at a later start time
- Change in RHS & RMS afternoon busing model
- Possible longer bus rides for RMS, RHS students

Why Start School an Hour Later at RHS?

Starting school at 8:30 a.m. adheres to the guidelines set by major medical organizations.

Why Start and End School 15 Minutes Later at All Elementary Schools?

The start and end times at each RTSD elementary school require a 15-minute shift to ensure bus transportation for all RHS and elementary students should RHS start at 8:30 a.m..

*How Could the New Afternoon Bus Transportation Model for RHS and RMS Work?

This new proposed afternoon bus transportation is admittedly a work in progress and requires close additional study and evaluation. As it stands, the new afternoon model proposes half of the district's bus fleet pick-up students at RHS while the other half of the bus fleet picks up students at RMS. The buses that started at RMS would then travel to RHS to pick-up the remaining RHS students before taking students home. Likewise, the buses that started at RHS would travel to RMS to pick up the remaining students before taking students home. This transportation model may involve additional costs pending further study.

Studying Sleep in RTSD

RTSD Adolescent Sleep & School Start Time Committee

Students

Tobey Le (RHS)
Scott Massey (RHS)
Ryan Oliver (RHS)
John Sutherby (RHS)
Lauren Yang (RHS)
Annabel Zhao (RHS)
Ryan Movsowitz (RMS)

Parents/Guardians

Michelle Leonard
Katherine Moore
John Reilly
Kristen Ressler
Rachel Ebby-Rosin
Shobha Sharma

District Staff Members

Michael Friel (RHS Athletic Director)
John Hearn (Director of Transportation)
Doug Kent, Ed.D. (RMS Assistant Principal)
Carl Rosin (RHS Teacher)
Anthony Rybarczyk, Ed.D. (Committee Co-Chair, Director of Elementary Teaching & Learning)
David Stango (Former RHS Assistant Principal)
Jessica Verguldi-Scott (RHS Teacher)

Parents/Guardians

Eileen Bookbinder
Erin Croke
Sarah Fox
Pamela Kenney
Jacqueline Kloss, Ph.D.
Alicia Kolber
Thomas Le

Community Members

Laura Foran
Roberta Winters

District Staff Members

Kenneth Batchelor (Superintendent)
Dan Bechtold (Committee Co-Chair, RHS Principal)

21 Meetings

Since May 2016, discussion regarding the the district's investigation into the subjects of adolescent sleep and school start time has taken place at eight public School Board and Committee meetings. Since November 2017, the RTSD Adolescent Sleep and School Start Time Committee has met 13 times.

2 Surveys

A survey for community members to share their thoughts on adolescent sleep and school start time was open from October 26-November 8, 2017 and received 502 responses. A survey for Radnor High School students on their sleep habits was open in March 2018 and received 848 responses.

6 Formal Presentations

Radnor Township School District welcomed two nationally known pediatric sleep experts for six total presentations for community members, staff and students on adolescent sleep and strategies to improve student sleep health, including by implementing later school start times. Dr. Judith Owen visited RTSD in February 2016 and Dr. Wendy Troxel in March 2018.

Next Steps

The School Board received the recommendation from the Adolescent Sleep and School Start Time Committee on November 13, 2018. The Board is set to review the recommendation through February/March 2019 before voting on whether or not to adopt the recommendation. **No aspects of the recommendation will be implemented without Board approval.**

Share Feedback

sleep@rtsd.org

Dec. 3, 2018 Evening Meeting for Community
Jan. 7, 2019 "Science of Sleep" with Dr. Judith Owens

Radnor Township School District
135 S. Wayne Ave.
Wayne, PA 19087
www.RTSD.org



TIMELINE



IN THIS SECTION

1. Study Timeline: 2015-2019



This report is subject to change at any time. This section of this report is current as of March 15, 2019.

Representatives from Radnor Township School District have been informally and formally involved in discussions and meetings focused on the subjects of sleep and school start time since at least 2015. Activities conducted by the district include:

- Discussion at nine School Board and Committee meetings since May 2016
- Fifteen meetings of the RTSD Sleep and School Start Time Committee since Nov. 2017
- Three separate surveys for community members, RHS students, and private and parochial schools
- Five separate community and student/staff presentations featuring national sleep expert Dr. Judith Owens in Feb. 2016 and 2019 and national sleep expert Dr. Wendy Troxel in March 2018
- Eight separate feedback/information sessions for staff, parents and community members since Nov. 2018
- The creation of a dedicated webpage (www.RTSD.org/sleep) and an email address for ongoing community feedback (sleep@rtsd.org) in Sept. 2015
- Outreach to potentially impacted community partners and groups, including Central League representatives, before- and after-school care providers, and the Delaware County Intermediate Unit
- Conversation and collaboration with school districts that have changed school start times and districts that are also investigating a possible school start time change
- Retention of third-party bus-routing company to assist in determining greatest efficiency of bus runs

A complete timeline of activities related to the study of sleep and school start time in RTSD can be found on the following pages.

2014-2016

2017

2018

<p>August 2014 The American Academy of Pediatrics publishes research finding sufficient sleep integral to adolescent health</p>	<p>Oct. 2015-Present Representatives from the Leagues of Women Voters, RTSD, and parent groups from Lower Merion, Tredyffrin-Easttown, Radnor, and West Chester form the Regional Adolescent Sleep Needs Committee (RASNC). RASNC has met every month during the school year since formed. Current members represent 14 school districts</p>	<p>Feb. 21 & 22, 2016 Nationally renowned pediatric sleep expert Dr. Judith Owens visits RTSD to speak to staff, students, parents and community members</p>	<p>June 2016 The initial district-supported Adolescent Sleep Needs Task Force holds its first meeting</p>	<p>June 27, 2017 Superintendent Kenneth E. Batchelor, who joined RTSD in February 2017, names exploration of student sleep needs and school start time an RTSD 2017-18 Priority Project</p>	<p>Sept. 19, 2017 School Board Curriculum Committee meeting: Announcement made that RTSD Adolescent Sleep and School Start Time Committee will be created</p>	<p>Oct. 26-Nov. 8, 2017 Survey open for Radnor community on adolescent sleep and school start time; survey includes application to apply to be member of the to-be-formed Adolescent Sleep and School Start Time Committee</p>	<p>Dec. 14, 2017 Meeting of the Adolescent Sleep and School Start Time Committee: Members separate into subcommittees focused on areas of study such as Academics and Transportation</p>	<p>Jan. 11, 2018 Meeting of Adolescent Sleep and School Start Time Committee: Review of RTSD mission statement and purpose of committee; discussion about research and possible impacts on community; identification of questions for FAQ and pros and cons of a later school start time; discussion of other strategies that address student sleep</p>	<p>Feb. 22, 2018 Meeting of Adolescent Sleep and School Start Time Committee: Final review of Teen Sleep Habits Survey; review of FAQs; break-out groups discuss scenarios: no later start time/plan to address student sleep needs and later school start time/associated logistics</p>	<p>March 14-28, 2018 Teen Sleep Habits Survey given to RHS students in English classes</p>
<p>August 2015 Former RTSD Superintendent Dr. Michael Kelly announces at the School Board Business Meeting that the district will be taking a look at the issue of adolescent sleep needs and school start time</p>	<p>Dec. 2015 With support from local school districts such as RTSD and T/E, RASNC finalizes planning for a public event featuring Dr. Judith Owens, a nationally renowned pediatric sleep expert</p>	<p>May 24, 2016 At School Board meeting, RTSD affirms commitment to support efforts to ensure students get sufficient sleep</p>		<p>Aug. 15, 2017 RTSD Curriculum Committee names "Adolescent Sleep" a planned agenda item for certain 2017-18 Curriculum Committee Meetings</p>	<p>Sept. 26, 2017 At a planning meeting, district staff reiterate the district's ongoing commitment to the topic of student sleep and school start time and share a timeline and action plan for the study. Previous members involved in the initial Adolescent Sleep Needs Task Force are encouraged to apply to become a member of the new committee</p>	<p>Nov. 29, 2017 First meeting of the Adolescent Sleep and School Start Time Committee: Introduction of members; review of the RTSD mission statement; discussion about committee's purpose; and initial work to establish study areas</p>	<p>Jan. 25, 2018 Meeting of the Adolescent Sleep and School Start Time Committee: Members of RASNC discuss the organization's background and guiding principles and conduct Q&A. Committee members review questions for a Teen Sleep Habits survey for RHS students, develop FAQs, and receive an update on the creation of dedicated website and email address</p>	<p>March 12 & 14, 2018 Pediatric sleep expert Dr. Wendy Troxel visits RTSD to present to area parents and community members (March 12) and RHS students in grades 9-12 (March 14)</p>		

2018

April 26, 2018 Meeting of Sleep and School Start Time Committee: Overview of progress to date; review of Teen Health Habits Survey data; determination to evaluate at least four options ranging from no change in school start time to a 90-minute adjustment	May 7, 2018 Meeting of Adolescent Sleep and School Start Time Committee: Evaluation of different start time scenarios; discussion of items impacted by a change in start time, including transportation, schedules, sports, community youth sports, and clubs/activities	May 21, 2018 Meeting of Adolescent Sleep and School Start Time Committee: Decision made to ask RHS and RTSD administrators to follow up to evaluate the scenarios to determine impact on RTSD as well as community as a whole	August 28, 2018 School Board Business Meeting: Presentation on progress and next steps for the Adolescent Sleep and School Start Time Committee as part of larger presentation on the 2017-18 RTSD Goals and Priority Projects	Week of Sept. 10, 2018 Discussions with RTSD school administrators regarding impact of possible time change on all District schools	Oct. 8, 2018 Draft of Adolescent Sleep and School Start Time Committee Report and Initial Recommendation made available to members of Adolescent Sleep and School Start Time Committee for review prior to Oct. 10 meeting.	Nov. 1, 2018 Meetings with RTSD staff members to review and discuss Adolescent Sleep and School Start Time Committee Report and Initial Recommendation	Nov. 8, 2018 Meetings with RHS students to discuss Adolescent Sleep and School Start Time Committee Report and Initial Recommendation	Nov. 13, 2018 Curriculum Committee Meeting of the Whole School Board: Adolescent Sleep and School Start Time Committee Report and Initial Recommendation presented	Nov. 28, 2018 • Meeting of the Sleep and School Start Time Committee • Feedback session with Radnor High School students	Dec. 4, 2018 Feedback session with Radnor High School staff	Dec. 7, 2018 • Feedback session with Ithan Elementary School staff • Feedback session with Radnor Middle School staff
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April 12, 2018 Meeting of the Adolescent Sleep and School Start Time Committee: Update from RASNC regarding a webinar with Dr. Ali Haghani, an expert in the field of transportation, in which committee members participated; overview of Teen Sleep Habits Survey, which was completed by 848 RHS students; further discussion on start time scenarios	May 8, 2018 Curriculum Committee Meeting of the Whole School Board: Presentation on the progress of the Adolescent Sleep and School Start Time Committee, including purpose of committee; committee members; objectives of the study; summary of results of the Teen Sleep Habits Survey; and next steps	Week of August 27, 2018 Meetings held with RTSD Transportation Department to evaluate all start time scenarios	Sept. 7, 2018 Timeline developed for release of final Adolescent Sleep and School Start Time Committee proposal on whether a later school start time in RTSD is feasible and recommended. Initial Recommendation is subject to a vote by the School Board prior to any action (scheduled for Spring 2019)	Sept. 11, 2018 Curriculum Committee Meeting of the Whole School Board: Adolescent Sleep and School Start Time listed as a "Priority Project" on proposed district Goals and Priority Projects for 2018-19	Oct. 10, 2018 Meeting of Adolescent Sleep and School Start Time Committee: Review of draft Adolescent Sleep and School Start Time Committee Report and Initial Recommendation	Nov. and Dec. 2018 Feedback sessions on Adolescent Sleep and School Start Time Report with staff at each school building and Radnor High School students	Nov. 9, 2018 Adolescent Sleep and School Start Time Report and Initial Recommendation made available to School Board and public	Nov. 27, 2018 Feedback session with Radnor Elementary School staff	Dec. 3, 2018 Evening meeting open to public to discuss Adolescent Sleep and School Start Time Report and Initial Recommendation and receive feedback	Dec. 5, 2018 Feedback session with Wayne Elementary School staff	Dec. 12, 2018 Meeting of the Sleep and School Start Time Committee
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2019

Jan. 7, 2019
Evening meeting open to public to discuss Adolescent Sleep and School Start Time Report and Initial Recommendation and receive feedback

Feb. 7, 2019
"The Science Behind Sleep" with nationally renowned sleep expert Dr. Judith Owens

March 11, 2019
Meeting of the Sleep and School Start Time Committee: The committee further narrowed the Final Recommendations

March 21, 2019
Meetings with RMS staff members to review and discuss Sleep and School Start Time Committee Final Recommendation

April 2, 2019
Community Meeting to Update Stakeholders and Receive Feedback on Final Recommendation

April 8, 2019
Community Meeting to Update Stakeholders and Receive Feedback on Final Recommendation

Jan. 23, 2019
Meeting of the Sleep and School Start Time Committee:

Feb. 28, 2019
Meeting of the Sleep and School Start Time Committee: The committee debriefed on the Dr. Owens' event and discussed updated study information to begin narrowing down final school start time recommendations

March 20, 2019
Meetings with RHS and ES staff members to review and discuss Sleep and School Start Time Committee Final Recommendation

March 26, 2019
Presentation of Final Recommendation to School Board and discussion

April 3, 2019
Community Meeting to Update Stakeholders and Receive Feedback on Final Recommendation

April 23, 2019
Planned School Board vote

EDUCATING THE COMMUNITY



IN THIS SECTION

1. Public Forums
2. Website
3. Feedback Opportunities
 - a. Surveys
 - b. Email Address
 - c. Upcoming Events

This report is subject to change at any time based on ongoing discussions and investigation. It is current as of Dec. 6, 2018.

Since 2015, Radnor Township School District has actively sought to educate the RTSD community about the issues of adolescent sleep and strategies to improve adolescent sleep health, including discussions regarding the possibility of a later school start time.

PUBLIC FORUMS

Radnor Township School District has welcomed two nationally renowned sleep experts to speak to parents, community members, students, and staff members: Dr. Judith Owens in February 2016 and Dr. Wendy Troxel in March 2018.

Dr. Judith A. Owens



Dr. Judith Owens is Director of Sleep Medicine at Boston Children's Hospital in Boston Massachusetts and a Professor in Neurology at Harvard Medical School. She is an internationally-recognized authority on pediatric sleep and the author of over 150 original research and review articles in peer-review journals, chapters, and books on the topic. Her particular research interests are in the neurobehavioral and health consequences of sleep problems in children, sleep

health education, and cultural and psychosocial issues impacting on sleep.

Previously, Dr. Owens was the Director of Sleep Medicine at Children's National Medical Center in Washington DC (2010-15) and Director of the Pediatric Sleep Disorders Clinic and the Learning, Attention, and Behavior Program at Hasbro Children's Hospital in Providence, Rhode Island. She received her undergraduate and medical degrees from Brown and a Master's in Maternal and Child Health from the University of Minnesota. She completed pediatric residency training at Children's Hospital of Philadelphia, and fellowships in Behavioral Pediatrics at Minneapolis Children's Medical Center and in Child Psychiatry at Brown University. She is board certified in Pediatrics and Sleep Medicine.



In February 2016, Dr. Owens visited RTSD as a panelist for an evening program, "Sleep and the Adolescent Brain,"¹

which also featured Dr. Katharine Dahlsgaard, the Lead Psychologist at the Anxiety Behaviors Clinic at the Children's Hospital of Philadelphia, and Dr. Joseph O'Brien, the Executive Director of the Chester County Intermediate Unit. Hundreds of parents and community members from

Radnor and surrounding school districts attended the presentation, which centered on the causes and implications of sleep deprivation in adolescents and strategies to help. Dr. Owens also presented separately to staff members (pictured).

Dr. Wendy Troxel



Dr. Wendy Troxel is a Senior Behavioral Scientist at the RAND Corporation and Adjunct Faculty in the Departments of Psychiatry and Psychology at the University of Pittsburgh. A licensed clinical psychologist and certified behavioral sleep medicine

specialist, her work has been funded by the National Institutes of Health and the Department of Defense, as well as private foundations and corporations. Dr. Troxel's work has been widely cited by the media, including *The Wall Street Journal*, *The New York Times*, *The Financial Times*, ABC World News Tonight, CBS Sunday Morning, NPR and BBC. Dr. Troxel was also one of the featured sleep experts in the National Geographic documentary "Sleepless in America" and her TED talk on the impact of school start times on adolescent sleep has received more than 1.5 million views.

During her visit to RTSD in March 2018, Dr. Troxel spoke to staff members and officials from other school districts during a day-time presentation and to more than 400 attendees throughout the region at

1. <http://bit.ly/sleepandadolescentbrain>

a public evening presentation. A third presentation was given to Radnor High School students the following day.



During Dr. Troxel's presentations, she reviewed the science behind the sleep patterns of adolescent students, the implications for students who do not get enough

sleep, and immediate strategies to help adolescents improve their sleep hygiene beyond a change to the school start time.

WWW.RTSD.ORG/SLEEP



Since September 2015, a webpage on the district's website, www.RTSD.org, has been dedicated to providing the public information on the latest developments in the

science behind adolescent sleep. Beginning in December 2017, www.RTSD.org/sleep also regularly chronicled the work and progress of the RTSD Adolescent Sleep and Start Time Committee. The

webpage also houses related resources, community and student feedback, and a study timeline.

FEEDBACK OPPORTUNITIES

Two Surveys

- From October 26 to November 8, 2017, a survey on student sleep and school start time was open and advertised to the Radnor community. The survey included the opportunity to apply to be member of the to-be-formed RTSD Adolescent Sleep and School Start Time Committee. The survey was completed by more than 500 community members, with nearly 100 requesting consideration to be on the committee. **The complete results of the survey can be found on www.RTSD.org/sleep.**

- From March 14-28, 2018, a "Teen Sleep Habits Survey" was administered to Radnor High School students in their English classes. Nearly 850 students in grades 9-12 (approximately 72%) completed the survey. **An overview of the survey results can be found on www.RTSD.org/sleep.**

Email

A dedicated email address, sleep@rtsd.org, was established when the RTSD Adolescent Sleep and School Start Time Committee began its work to allow members of the public to provide ongoing feedback.

Recent and Upcoming Events

November/December 2018

Meetings with faculty, staff members and students regarding Adolescent Sleep and School Start Time Report and Initial Recommendation

November 13, 2018

Presentation of Adolescent Sleep and School Start Time Report and Initial Recommendation at Curriculum Committee Meeting of the Whole School Board

December 3, 2018

Planned evening meeting open to public to discuss Adolescent Sleep and School Start Time Report and Recommendation and receive feedback.

February 2019

Planned event open to the public focusing on “The Science Behind Sleep” featuring nationally renowned sleep expert Dr. Judith Owens.

February 2019

Planned School Board discussion during respective Committee Meetings and monthly Board Business meeting.

Spring 2019

Planned School Board vote on whether to accept and implement Adolescent Sleep and School Start Time Recommendation at monthly Board Business meeting

Chapter 2

Research and Data



THE SCIENCE OF ADOLESCENT SLEEP



IN THIS SECTION

1. The Circadian Rhythm
2. Getting a Good Night's Sleep
3. Consequences of Sleep Deprivation
4. School Start Times
5. Economic Benefits



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According to many national health organizations, such as the American Academy of Pediatrics (AAP), the Centers for Disease Control and Prevention (CDC), the American Academy of Sleep Medicine, the Society of Behavioral Medicine, and the National Sleep Foundation (NSF), adolescents have different sleeping rhythms than they do during life's other developmental stages. It is more difficult for adolescents to fall asleep earlier and wake up earlier, which leads to sleep deprivation that can be physically, socially, emotionally and academically detrimental.

According to the National Sleep Foundation's "Adolescent Sleep Needs and Patterns Research Report and Resource Guide," sleep is a basic drive of nature that helps people think clearly, complete tasks, and fully enjoy life.

THE CIRCADIAN RHYTHM

According to the NSF, a person's circadian rhythm is essentially a 24-hour clock running in the background of the brain that cycles between sleepiness and alertness.

According to a 2017 article published in SAGE research journal *Phi Delta Kappan*¹, "it's a matter of biology, not choice" when it comes to adolescents' inability to fall asleep before approximately 10:45 p.m. Their brains also remain in "sleep mode" until about 8

1. Wahlstrom, K., 2016, Later start time for teens improves grades, mood, and safety, SAGE research journal, *Phi Delta Kappan*.

a.m. This delay in adolescents' circadian rhythms is directly related to hormonal changes during puberty. Most people experience this so-called "sleep phase shift" during adolescence; the shift disappears as people enter their 20s. Adolescents also experience "delayed sleep phase," or a shift in the production of melatonin, the sleep hormone, by two hours.²

GETTING A GOOD NIGHT'S SLEEP

The CDC and NSF recommend adolescents get eight to 10 hours of sleep per night. The AAP recommends 8.5 to 9.5 hours.

As of 2015, the average school start time for the majority of American public middle, high, and combined schools (constituting almost 26.3 million students) was 8:03 a.m.³. If the typical high schooler naturally falls asleep at 11 p.m. or later according to the NSF, a school day beginning at 8 a.m. or earlier makes it difficult, if not impossible, for adolescents to get the amount of sleep as recommended by medical organizations.

2. Crowley, S., Acebo, C., Carskadon, M., 2007, *Sleep, circadian rhythms, and delayed phase in adolescence*, *Sleep Medicine*

3. Wheaton, A., Ferro, G., Croft, J., 2015, *School Start Times for Middle School and High School Students — United States, 2011–12 School Year*, *Morbidity and Mortality Weekly Report*, Centers for Disease Control and Prevention.

According to a 2010 large-scale study published in The Journal of Adolescent Health, just 8% of American high school students get the right amount of sleep.

CONSEQUENCES OF SLEEP DEPRIVATION

According to the AAP⁴, chronic sleep loss in children and adolescents is one of the most common – and easily fixable – public health issues in the United States. The AAP states:

The research is clear that adolescents who get enough sleep have a reduced risk of being overweight or suffering depression, are less likely to be involved in automobile accidents, and have better grades, higher standardized test scores and a...better quality of life.

Sleep deprivation in adolescents can result in poor health and academic performance, limiting the ability to learn, listen, concentrate, and solve problems.⁵ Lack of sleep can also contribute to acne and other skin problems; aggressive or

4 and 5. Owens, J., 2014, *School Start Times for Adolescents*, American Academy of Pediatrics

On Need for Action, Medical Organizations Agree

Since 2014, prominent national medical organizations have confirmed chronic sleep deprivation is a health epidemic and issued recommendations stating **adolescents need 8 to 10 hours of sleep each night and secondary schools should start no earlier than 8:30 a.m.**

American Academy of Pediatrics

American Medical Association

American Psychological Association

American Academy of Child and Adolescent Psychiatry

Centers for Disease Control & Prevention

National Parent Teacher Association

American Academy of Sleep Medicine

Society of Behavioral Medicine

National Association of School Nurses/
Society of Pediatric Nurses

List not all inclusive



inappropriate behavior; over- or unhealthy eating and weight gain; an increase in the use of caffeine and nicotine; and unsafe driving.

SCHOOL START TIMES

According to the National Education Association, increasing evidence supports the notion that later school start times make a difference in students’ lives, including through improved educational outcomes and mental health. The NEA states that physicians have been advocating for later start times for more than 20 years, and the body of literature linking adolescent sleep with increased student success has grown in depth and rigor over that time.

According to the National Sleep Foundation, “classes should not start in most cases until 8:30 a.m. or later.”⁶ In its School Start Times for Adolescents Policy Statement, the AAP stated⁷:

The American Academy of Pediatrics strongly supports the efforts of school districts to optimize sleep in students and urges high schools and middle schools to aim for start times that allow students the opportunity to achieve optimal levels of sleep....”

ECONOMIC BENEFIT

According to a 2017 Rand Corporation Study, later school start times could have a substantial impact on public health and the United States

economy. The predicted benefit per student suggests that under reasonable cost assumptions, even after a relative short period of time, the benefits will outweigh the costs, according to the study.⁸

At a national level, up to 3% of GDP is lost due to lack of sleep, and an increase in sleep could add \$226.4 billion to the U.S. economy.⁹

Furthermore, economic modeling of data from five OECD countries found that individuals who sleep fewer than six hours a night on average have a 13% higher mortality risk than people who sleep at least seven hours.¹⁰

How Sleep Deprivation Impacts Students

Mental Health

Teenagers sleeping less than eight hours at night were about three times more likely to make a suicide attempt compared to those sleeping nine hours or more.
(Liu, X.,2004, Sleep and Adolescent Suicide Behavior, Sleep)

Problematic Behavior

A study involving 12,154 high school students found teenagers who get less than eight hours of sleep versus more than eight hours of sleep were more likely to engage in risky behaviors such as fighting, smoking, alcohol/marijuana use, and sexual activity.
(McKnight-Eily, 2011, Relationships between hours of sleep and health-risk behaviors in US adolescent students, Preventive Medicine)

Distracted Driving

Car crash rates decreased by 16.5% when school start time was moved one hour later.
(Danner, F and Phillips, B, 2008, Adolescent Sleep, School Start Times, and Teen Motor Vehicle Crashes, Journal of Clinical Sleep Medicine)

Physical Health and Obesity

Teenagers not obtaining adequate sleep at age 16 were 20% more likely to be obese by age 21.
(Suglia SF, Kara S, Robinson WR, 2014, Sleep duration and obesity among adolescents transitioning to adulthood: do results differ by sex? Journal of Pediatrics)

6. National Sleep Foundation. 2014 Sleep in America Poll: Sleep in the Modern Family. Washington (DC): The Foundation; 2014 Mar.
7. Owens, J., 2014, School Start Times for Adolescents, American Academy of Pediatrics
8-10. Marco Hafner, Martin Stepanek, Jirka Taylor, Wendy M. Troxel, Christian Van Stolk 2016, Why sleep matters — the economic costs of insufficient sleep: A cross-country comparative analysis, Rand Corporation

RADNOR HIGH SCHOOL STUDENT SURVEY



IN THIS SECTION

1. Results of Teen Sleep Survey

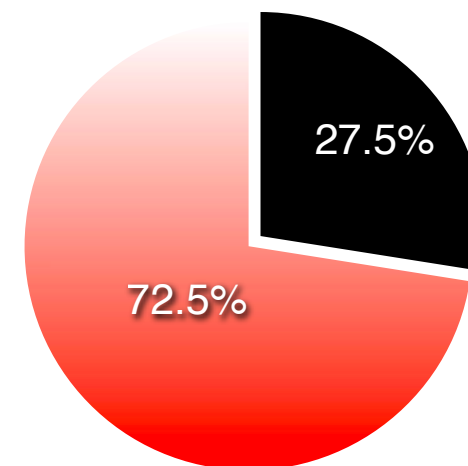
This report is subject to change at any time based on ongoing discussions and investigation. It is current as of Dec. 6, 2018.

As part of the Adolescent Sleep and School Start Time Committee's work, all Radnor High School students were invited to take a "Teen Sleep Survey" online. The survey was given during the school day a week after the students attended a presentation at RHS by sleep expert Dr. Wendy Troxel on March 14, 2018.¹ 848 of 1,183 of students (about 72%) took the survey.

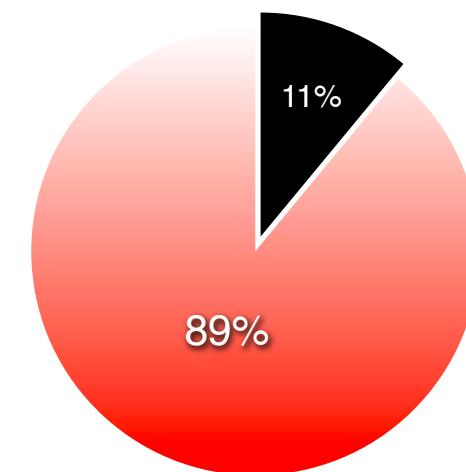
Survey Highlights

1. *Students get insufficient sleep on school nights.*

Students were asked to rate what time they usually go to bed and wake up on school nights versus weekend nights.

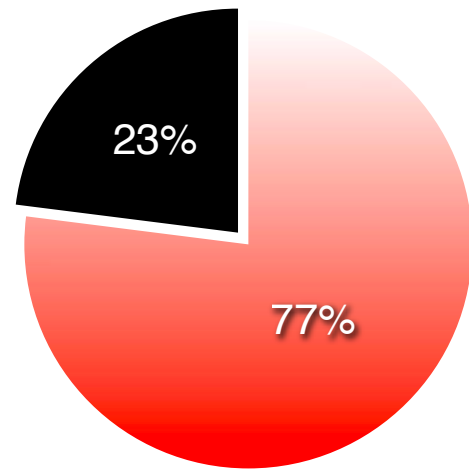


● In Bed Before 10:30 p.m. on Weekdays
● In Bed After 10:30 p.m. on Weekdays

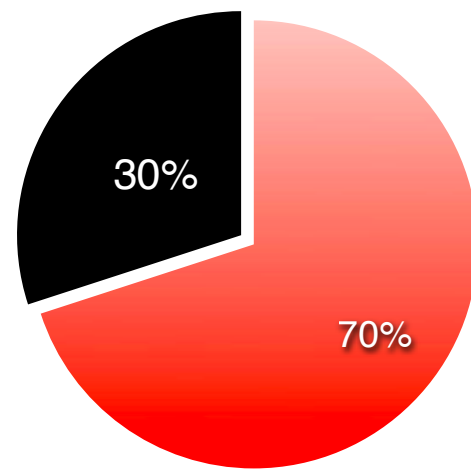


● In Bed Before 10:30 p.m. on Weekends
● In Bed After 10:30 p.m. on Weekends

1. See Chapter 1, Section 3: Educating the Community, pages 8-11

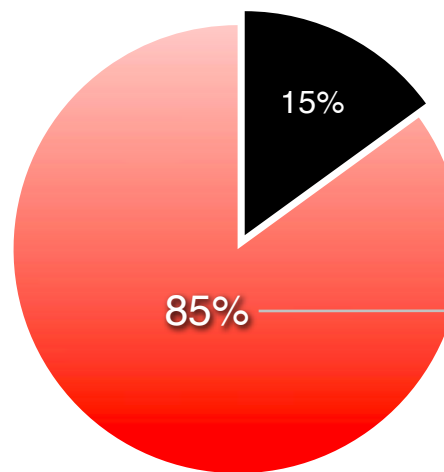


● Weekends: Wake Up No Earlier Than 8:30 AM
● Weekends: Wake Up Earlier Than 8:30 AM



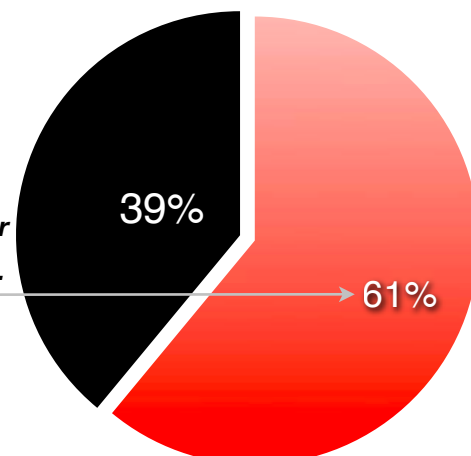
● Weekdays: Wake Up Earlier Than 6:30 AM
● Weekdays: Wake Up Later Than 6:30 AM

2. Most students prefer a later school start time.



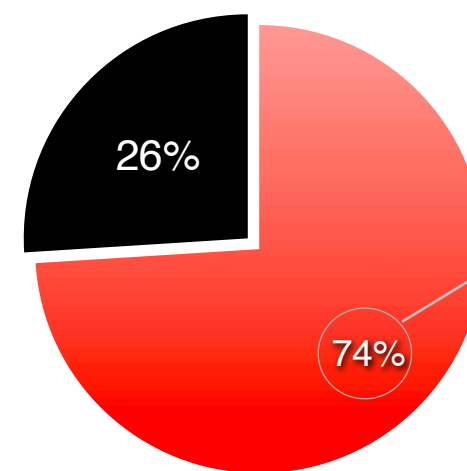
● Start the School Day Before 8 AM
● Start the School Day 8 AM or Later

Of the 85%, 61% would prefer a 8:30 AM or later start.

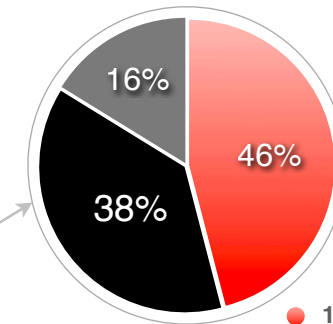


● Prefer to Start the School Day 8:30 AM or Later
● No Preference

3. Students Have Difficulty Falling Asleep Before 10 PM

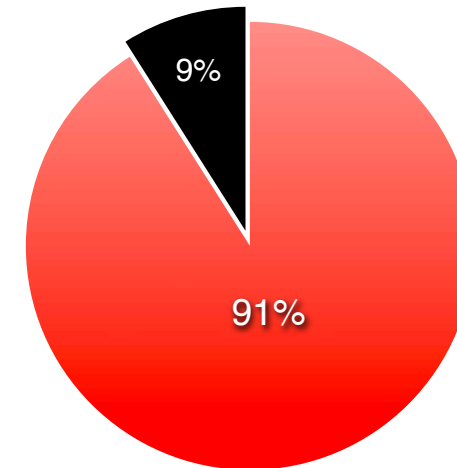


● Your Body Starts to Tell You It's Time for Bed After 10 PM
● Your Body Starts to Tell You It's Time for Bed Before 10 PM

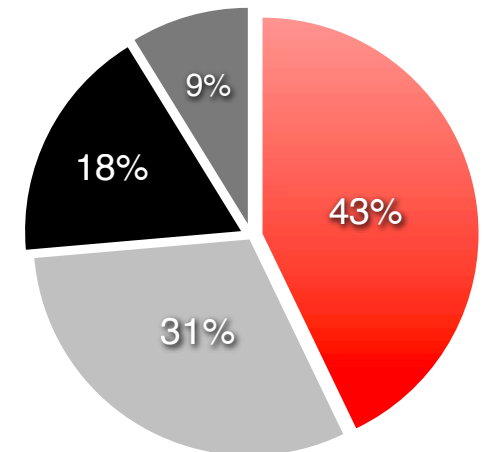


● 10-11 PM
● 11 PM-12 AM
● After 12 AM

4. Most students feel sleepiness is a problem.

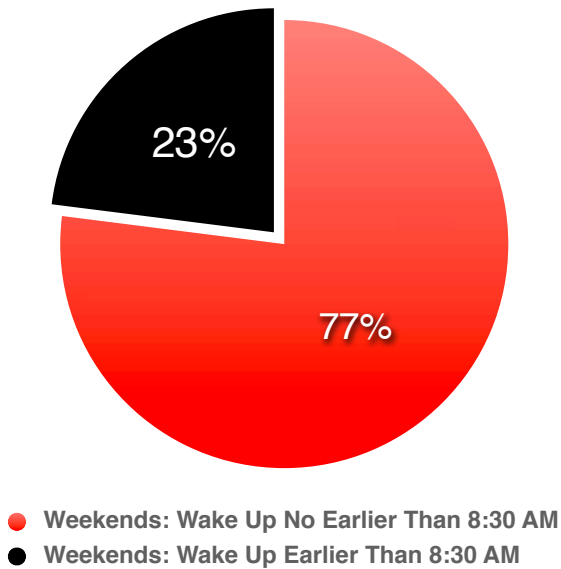


● Sleepiness is a Problem During Daytime
● Sleepiness is Not a Problem During Daytime

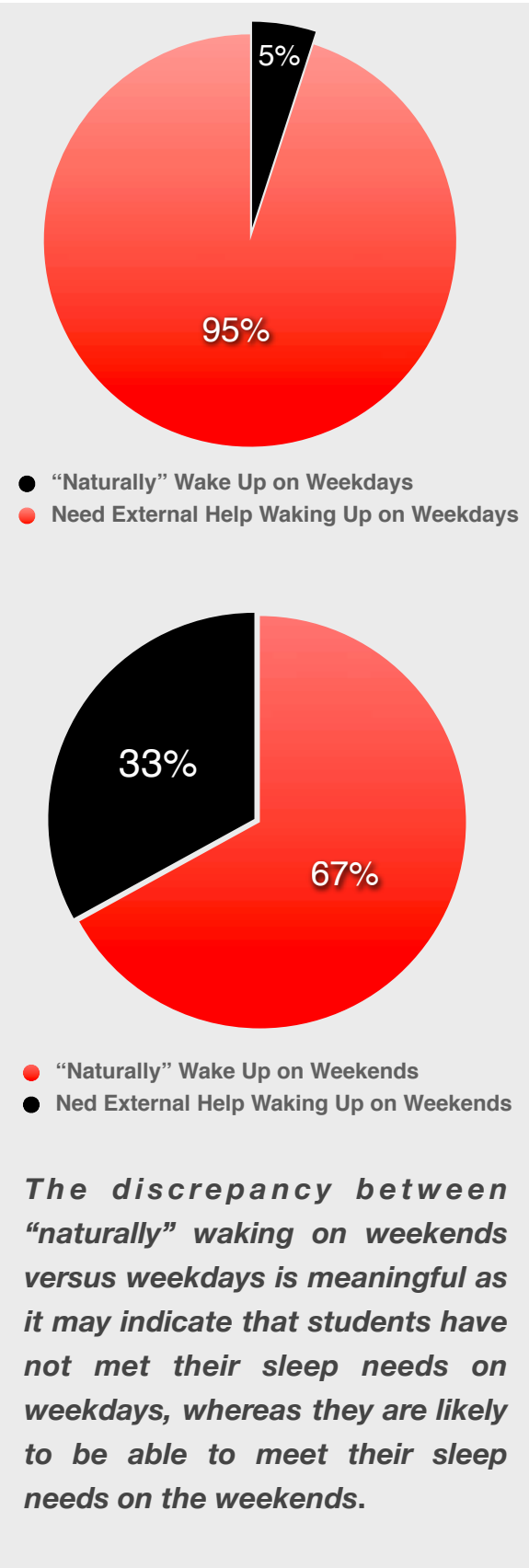
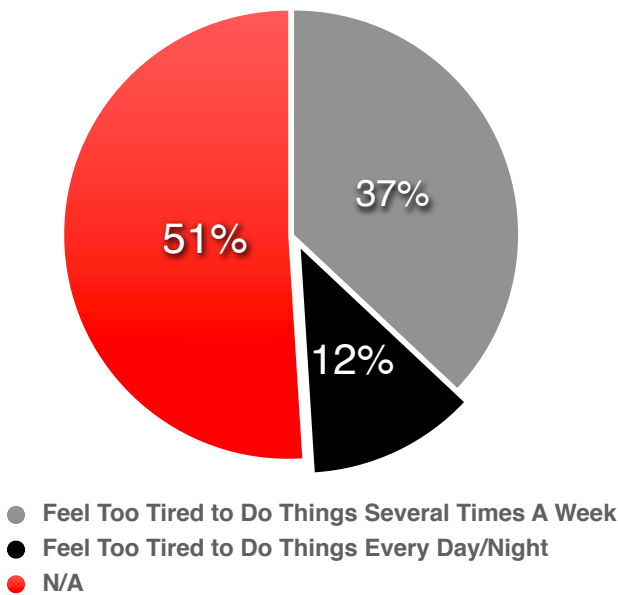


● Sleepiness is a Little Problem
● Sleepiness is More Than a Little Problem
● Sleepiness is a Big Problem
● Sleepiness is a Very Big Problem

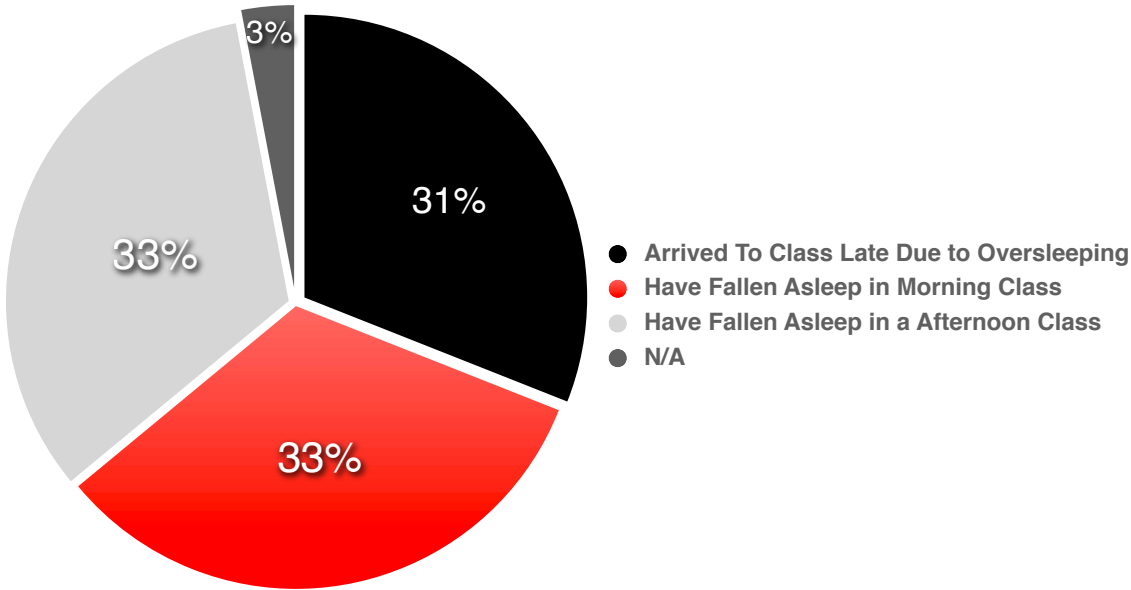
5. Students Naturally Wake Up After 8:30 AM



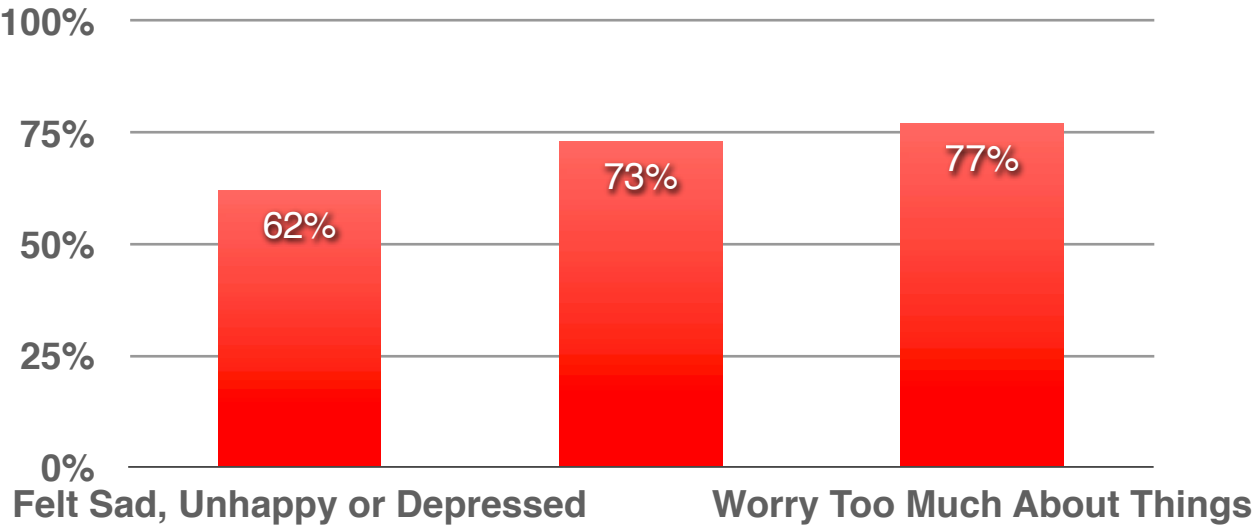
6. Nearly 50% Feel Too Tired To Do Things



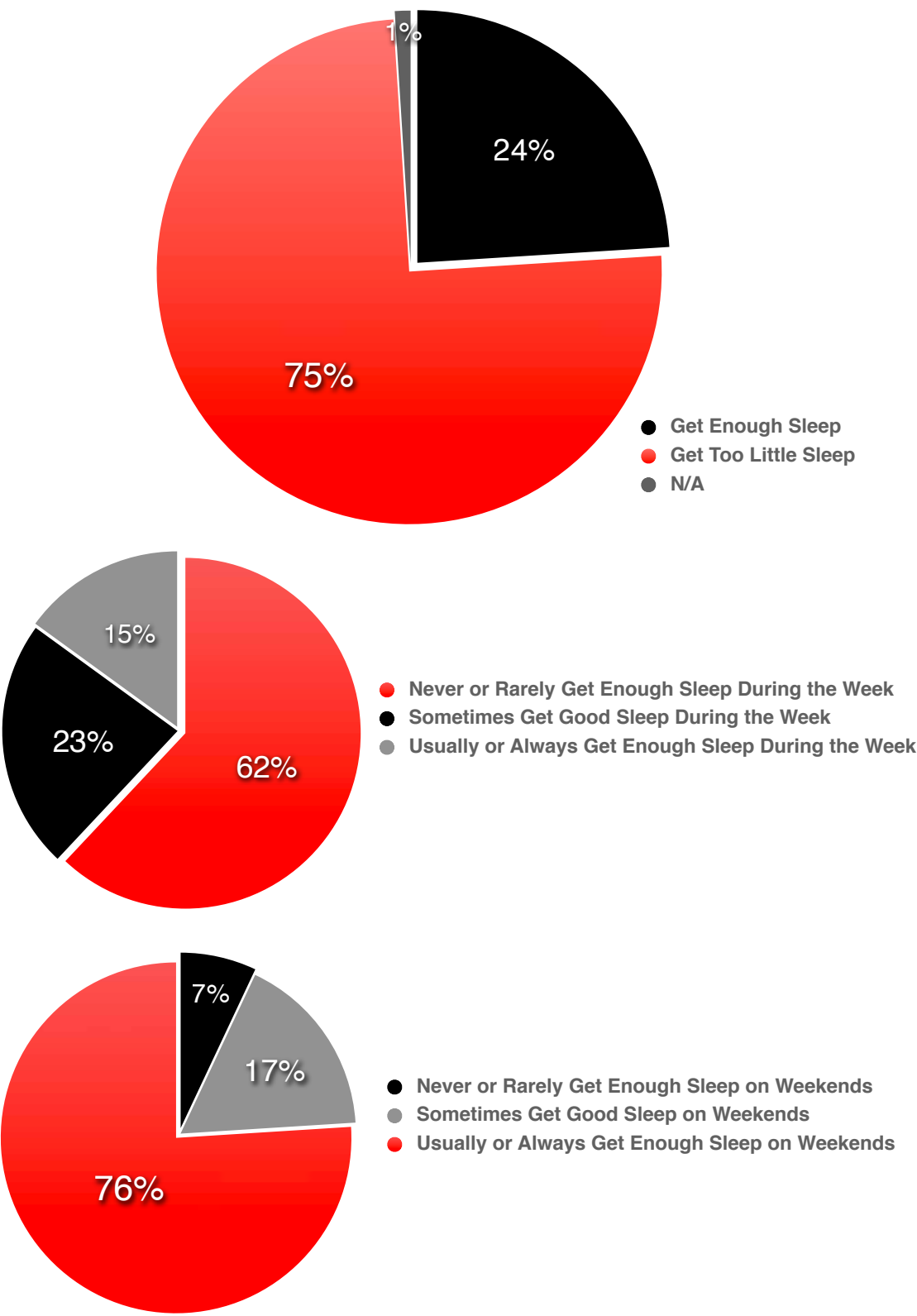
7. About 1/3 of students reported daytime consequences of sleep deprivation during class at least once in the previous two weeks.



8. A majority of students reported negative mood symptoms at least once during the previous two weeks.



9. Most students feel they do not get enough sleep.



WHAT ELSE MIGHT IMPACT STUDENT SLEEP?

In terms of sleep quality, 35% of RHS students who completed the Teen Sleep Survey in March 2018 consider themselves “poor sleepers.”

Nearly half of the respondents (46%) reported staying up until 3 a.m. or later at least once over the prior two weeks.

Just 6% of participating students reported having a good night’s sleep every night over the past two weeks, whereas 61% reported either never, once, or twice having a good night sleep over the previous two weeks.

Homework

According to the Teen Sleep Survey results, homework primarily dictates what time students go to bed on school nights. Forty-three percent of respondents cited “I have finished my homework,” as to why they go to bed, followed by 29% for “I felt sleepy.” Sixty-four percent (64%) of respondents reported they would go to bed earlier if not for studying. In comparison, students’ primary reason for going to bed on weekends was “I felt sleepy” (42%), followed by “finished socializing” (30%)

The State of Homework

- 91% of student respondents reported doing homework/studying during prior week
- 63% of student respondents reported doing 2-4 hours of homework per night
- 18% of student respondents reported doing 4-6 hours of homework per night
- 53% of student respondents they either struggle to stay awake or fall asleep while studying

Extracurricular Activities

Seventy-one percent (71%) of RHS student-respondents report being involved in organized sports and/or regularly scheduled physical activity, while 37% reported participating in clubs and other activities. Responses from the survey suggest these commitments may be obstacles to adequate sleep for some students. Fifty-percent (50%) of student-respondents who participate in organized sports or activities and 37% of students involved in clubs/activities report they'd go to bed earlier if not for their involvement.

After-School Employment

Working for pay is also an obstacle to sleep for 9% of RHS student-respondents. Twenty-seven percent (27%) reported working for pay.

- 47% report working less than 5 hours per school week
- 27% report working 5-10 hours per school week
- 26% report working 10+ hours per school week

Of the working students, 6% reported struggling to stay awake while at work and 31% reported they would go to bed earlier if not for their job.

Technology

Access to technology is also an obstacle to sleep. Fifty-percent (50%) of respondents report they turn off every nearby device before sleep.

- 88% of students report having their cell phone in their bedroom
- 58% of students report having a computer in their bedroom
- 16% report having a television in their bedroom

Chapter 3

GENERAL SLEEP HEALTH STRATEGIES

*There are certain steps that be taken right now
to help adolescents get more sleep.*



GENERAL SLEEP HEALTH STRATEGIES



IN THIS SECTION

1. Strategies to Improve Sleep Health Now

This report is subject to change at any time based on ongoing discussions and investigation. It is current as of Dec. 6, 2018.

There are many steps that can immediately be taken to improve sleep health. Regardless of the final schedule at Radnor High School, RTSD is committed to educating parents, students, staff and community members about ways to promote healthier sleep patterns in students.

- **Turn Off Electronic Devices** a minimum of an hour before trying to go to sleep.
- **Control Diet After Dinner:** Avoid snacking and caffeine
- **Avoid Over-scheduling:** Set realistic expectations that family and friends support and accept
- **Set good examples:** Parents can lead the way by making sleep a priority for themselves, eating right and exercising regularly
- **Streamline mornings:** Organize for the next day the night before by picking out clothes, gathering books, and packing lunch
- **Bed is for Sleep:** Associate bed for sleeping only. Do homework in another room.
- **Complete Tasks with Screen Time First**
- **Shift Family Routines:** Expose adolescents to outside light in the morning by walking the dog, taking out the trash, or walking to school
- **Keys to a Good Night's Sleep**
 - Implement a Family Media Plan
 - Non-Phone Alarm Clock
 - Blue-Light Filters
 - Weighted blankets
 - Cool Room
 - Smart Lights (dimming)
- **School- and District-Based**
 - Core classes later in day
 - Shift exams to later in day
 - Include sleep hygiene education in curriculum
 - "Student Wellness" a 2018-19 School Board-approved RTSD goal



FROM THE NATIONAL SLEEP FOUNDATION

- Sleep is vital to a people's well-being, as important as the air they breathe, the water they drink and the food they eat. It can help adolescents eat better and manage stress.
- Biological sleep patterns shift toward later times for both sleeping and waking during adolescence — meaning it is natural to not be able to fall asleep before 11 p.m.
- Most teens do not get enough sleep — one study found that only 15% reported sleeping 8.5 hours on school nights.
- Teens tend to have irregular sleep patterns, typically staying up late and sleeping in on weekends, which can affect their biological clocks and harm sleep quality.
- Many teens suffer from treatable sleep disorders, like1 asnarcolepsy, insomnia, restless legs syndrome, or sleep apnea.
- When sleep deprived, a person is as impaired as driving with a blood alcohol level of .08%. Drowsy driving causes over 100,000 crashes each year.
- If planned correctly, naps make people work more efficiently. But naps that are too long or too close to bedtime can interfere with sleep.
- Where one sleeps should be a haven: cool, quiet, and dark. Bright light is helpful in the morning to signal to the body it is time to wake up.
- No pills or vitamins can replace good sleep. Caffeine close to bedtime can harm sleep. Coffee, tea, soda, and chocolate late in the day should be avoided. Nicotine and alcohol also interfere with sleep.
- A bed time and wake time should be established and met, even on the weekends. A consistent sleep schedule helps people feel less tired by allowing the body to sync with its natural patterns.
- It is best not to eat, drink, or exercise within a few hours of bedtime. Electronic devices should also be avoided the hour before bed.
- A bedtime routine is beneficial: if the same procedures are followed every night before bed, the body is signaled that it is time for bed.
- Jotting down notes before bed of things to be remembered or addressed the following day may make staying awake worrying or stressing less likely.

Recommendation

The RTSD Adolescent Sleep and School Start Time Committee recommends a later school start time at Radnor High School (from 7:35 a.m. to 8:30 a.m.) and a corresponding later school end time (from 2:27 p.m. to 3:04 p.m.)

To accommodate the bus transportation needs at Radnor High School due to this schedule change, the committee recommends a later school start time at Ithan, Radnor and Wayne elementary schools (from 9 a.m. to 9:15 a.m.) and a later school end time (from 3:30 p.m. to 3:45 p.m.).



SCHOOL START OPTIONS



IN THIS SECTION

1. Four Options for School Schedule

This report is subject to change at any time based on ongoing discussions and investigation. It is current as of Dec. 6, 2018.

Four high school start time options, and their impact on other RTSD schools, were discussed and considered by the Adolescent Sleep and School Start Time Committee. ***See page 28 for a chart providing an overview of the school schedule options.***

Option #1: No Change, Increase in Sleep Health Education

No Change to Radnor High School Schedule (7:30 a.m.-2:27 p.m.)

No change to Radnor Middle School schedule (8 a.m.-3 p.m.)

No change to Ithan, Radnor & Wayne elementary schools schedule (9 a.m.-3:30 p.m.)

Option #1 makes no change to the school schedule while taking steps to address student well-being associated with adolescent sleep needs. No changes to school schedules or transportation routes would occur, however all practices for district sports, clubs and activities would be required to take place after school. The district would also reexamine the amount of homework and provide parents information regarding the effects of late-night screen time as well as how to promote healthy sleep habits.

It is important to note that all action items related to increasing wellness education about sleep as listed in Option #1 are also proposed for implementation as part of the other three options.



Pros of Option #1

- No financial impact
- Minimal impact to RTSD sports due to elimination of morning practices to better support sleep health
- No impact on community group usage of athletic fields
- Increased understanding of sleep hygiene and time management

Cons of Option #1

- Does not address adolescent sleep need recommendations as outlined by the Centers for Disease Control and Prevention, the American Medical Association, the American Academy of Sleep Medicine, and the American Academy of Pediatrics

Option #2: Delay RHS Start Time By 25 Minutes

Resulting Radnor High School Hours: 8 a.m.-2:34 p.m.

No change to Radnor Middle School schedule

No change to Ithan, Radnor & Wayne elementary schools schedule

Option #2, which models a plan implemented by nearby Unionville-Chadds Ford School District beginning the 2017-18 school year, would push the start time for Radnor High School from 7:35 a.m. to 8 a.m., or a delay of 25 minutes.

Due to modifications to Radnor High School's schedule, efficiencies have been identified that would only require the school day to be

extended by seven minutes (from 2:27 to 2:34 p.m.) to accomplish a 25-minute later start time. The schedules of the other RTSD schools would not be impacted. Increased costs to the district would be associated with additional buses. A two-tier transportation model may be an option to increase efficiency of secondary bus runs, but the morning private school runs would necessitate additional bus drivers and vehicles.

Pros of Option #2

- Adheres more closely to the recommendations of the CDC, AMA, AASM and AAP
- Minimal impact to RTSD-sponsored sports
- No impact on community group usage of athletic fields

Cons of Option #2

- Negative financial impact of additional school buses and bus drivers.
- Only partially addresses adolescent sleep needs as outlined by the CDC, AMA, AASM and AAP

Option #3: Delay RHS Start Time By 55 Minutes

Resulting Radnor High School Hours: 8:30 a.m.-3:04 p.m.

No change to Radnor Middle School schedule

***Resulting Ithan, Radnor & Wayne elementary schools schedule:
9:15 to 3:45 p.m.***

Option #3 achieves the 8:30 a.m. high school start time as recommended by major medical organizations by delaying the start time for Radnor High School by 55 minutes.

What About a “Flip?”

When the committee considered Option #3, the idea of “flipping” the current elementary school start time of 8:45 a.m. with the current Radnor High School start time of 7:30 a.m. was discussed. A decision was made that achieving an 8:30 a.m. start time at Radnor High School should not result in the elementary school starting at 7:30 a.m. Rather, the committee agreed, achieving the 8:30 a.m. start at Radnor High School should involve an investigation into a new afternoon bus transportation model for Radnor Middle School and Radnor High School.

While the Radnor High School start time would be delayed to 8:30 a.m., the current Radnor Middle School start time of 8 a.m. would not change. Elementary schools would see a change in their current start times, however, with all schools starting 15 minutes later at 9:15 a.m. and ending 15 minutes later at 3:45 p.m.

Pros of Option #3

- Minimal impact on community group usage of athletic fields with continued support from RHS administration
- Minimal impact on RTSD-sponsored sports practices; RHS administration plans to address impact on athletic competitions
- Fully addresses adolescent sleep needs as outlined by the CDC, AMA, AASM and AAP

Cons of Option #3

- Earlier bus pick-up time for RMS students in the morning
- Private/special education school transportation logistics unknown at this time
- Change in afternoon bus transportation model for RHS and RMS
- Elementary families impacted by later start and end times

Option #4: Delay RHS Start Time By 85 Minutes

Resulting Radnor High School schedule: 9 a.m.-3:34 p.m.

No change to Radnor Middle School schedule

Resulting Ithan, Radnor and Wayne elementary schools schedule:

*A half-hour **earlier** start (from 9 a.m. to 8:30 a.m.) and end (from 3:30 p.m. to 3 p.m.) or a half-hour **later** start (from 9 a.m. to 9:30 a.m.) and end (from 3:30 p.m. to 4 p.m.) to the school day*

Option #4 exceeds the 8:30 a.m. high school start time recommended by major medical organizations. This model would require additional buses and drivers and would cause conflicts for scheduling bus runs with Radnor High School and RTSD elementary schools. Since the Radnor High School day would end at 3:34 p.m. under this option, the impact on high school athletics and community sports groups would be considerable. Academically speaking, student-athletes would likely miss class time regularly to get to competitions on time.

Pros of Option #4

- Exceeds adolescent sleep recommendations

Cons of Option #4

- Loss of instructional time for student-athletes
- Significant impact on RTSD-sponsored sports/athlete academics
- Significant impact on community group usage of athletic fields

Overview of Proposed School Schedule Options

School Schedule Options	Sleep Wellness Education?	Radnor High School Start Time	Radnor High School End Time	Elementary School Start Time	Elementary School End Time	Radnor Middle School Schedule Change?	Additional Buses Needed?	Impact to Radnor High School Sports?	Meets Medical Organizations' Recomms.?
No Change (Option 1)	Yes	7:35 AM	2:27 PM	9 AM	3:30 PM	No	No	No	No
25-Min Delay at RHS (Option 2)	Yes	8 AM	2:34 PM	9 AM <i>(If two-tier busing model implemented)</i>	3:30 PM <i>(If two-tier busing model implemented)</i>	No	TBD	No	No
55-Min Delay at RHS* (Option 3)	Yes	8:30 AM	3:04 PM	9:15 AM	3:45 PM	No	TBD	Yes, Minimal	Yes
85-Min Delay at RHS (Option 4)	Yes	9 AM	3:34 PM	8:30 AM or 9:30 AM	3 PM or 4 PM	No	TBD	Yes, High	Yes

*Initial recommended schedule from RTSD Adolescent Sleep and School Start Time Committee

STARTING RHS AT 8:30 A.M.



IN THIS SECTION

1. Current Elementary School Schedules
2. Current Radnor High School Schedule
3. Proposed RHS Schedules (8: 30 a.m. Start)
4. Instructional Time Overview

This report is subject to change at any time based on ongoing discussions and investigation. It is current as of Dec. 6, 2018.

As part of the analysis of an 8:30 a.m. start time at Radnor High School, many areas were and will continue to be examined, including Student Learning Time (Instructional Time); Transportation; Clubs, Athletics and Activities; Schedules; Staffing; and Equitable Opportunities.

Under the initial recommendation from the Adolescent Sleep and School Start Time Committee of an 8:30 a.m. RHS start time, RTSD schools would start and end at the following times:

Radnor High School: 8:30 a.m.-3:04 p.m.

Radnor Middle School: 8 a.m.-3 p.m.

Ithan, Radnor & Wayne elementary schools: 9:15 a.m.-3:45 p.m.

2018-19 Elementary School Schedules (See Page 30)

Ithan, Radnor and Wayne elementary schools serve approximately 1,650 students in grades K-5. Each building's schedule is organized by grade level. Students in each grade level rotate through "Specials" (Art, Music, Physical Education/Health, Library) and



lunch/recess time every week. Students in each grade level also have instructional time in English Language Arts (ELA), Mathematics, Social Studies or Science, and Intervention/Enrichment (I/E) time each day.

While all three elementary schools would start and end the school day 15 minutes later should the Radnor High School start time be delayed to 8:30 a.m., it is important to note that the structure of the elementary school day would not change.

Potential concerns regarding the timing of the last lunch are resolved due to all elementary schools incorporating a snack time for students scheduled for the last lunch of the school day. This is a common practice that is already in place.

As part of the initial recommendation to delay the elementary school start and end times by 15 minutes, it was also recommended for the RTSD Director of Elementary Teaching and Learning to work with the elementary principals, or designee(s), to streamline elementary bell schedules to provide the most efficient use of staff resources for Specials and Intervention/Enrichment (I/E) time. These resources are shared among the three elementary school buildings.

2018-19 Elementary School Schedules

2018-2019 ITHAN ELEMENTARY SCHOOL MASTER SCHEDULE									
Kinder	LANGUAGE ARTS 9:10-11:00 110		LUNCH/RECE SS 11:00-11:50		MATH 11:50-12:50 60		SPECIALS 1:00-1:50 50		SS/SC 2:10-2:40 30
Grade 1	LANGUAGE ARTS 9:10-10:00 50		MATH 10:00-11:00 60		RECESS/LUNCH 11:00-11:50		I/E 11:50-12:40 50		LA 12:40-1:50 70
Grade 2	LANGUAGE ARTS 9:10-10:00 50		MATH 10:00-11:00 60		SPECIALS 11:00-11:50 50		LUNCH/RECE SS 11:50-12:40		Language Arts 12:40-1:50 50
Grade 3	LANGUAGE ARTS 9:10-10:50 100		MATH 10:50-11:50 60		RECESS/LUNCH CH 11:50-12:40		I/E 12:40-1:30 50		LA 1:30-1:50 20
Grade 4	LA 9:15-9:30 15		Specials 9:30-10:05 50		I/E 10:05-10:55 50		Language Arts 10:55-11:40 45		MATH 11:40-12:40 60
Grade 5	LA 9:15-9:30 15		I/E 9:30-10:05 50		Specials 10:05-10:55 50		Math 10:55-11:55 60		Language Arts 11:55-12:40 45

Master Schedule - 5/22/18 Radnor Elementary School DRAFT H 2018 - 2019									
Kinder	LA 50		IE 50		MATH 60		RECESS LUNCH		LA 70
Grade 1	MATH 60		LA 50		LUNCH RECESS		IE 50		LA 70
Grade 2	LA 50		2nd grade Specials		MATH 60		LUNCH RECESS		IE 50
Grade 3	IE 50		LA 50		3rd grade Specials		MATH 60		LUNCH RECESS
Grade 4	4th grade Specials		MATH 60		LA 40		SS/SCI 60		RECESS LUNCH
Grade 5	LA 50		MATH 60		RECESS LUNCH		SS/SCI 60		5th grade Specials

WES Master Schedule 18-19									
Kindergarten	HR	LA (50) 9:10-10:00		K, IE (50) 10:00-10:50		Lunch (25) 10:50-11:15		Math (60) 11:40-12:40	
Grade 1	HR	LA (120) 9:10-11:10		SS/SC (50) 11:10-11:40		Lunch (25) 11:40-12:05		Math (60) 12:30-1:30	
Grade 2	HR	LA (50) 9:10-10:00		2nd Special (50) 10:00-10:50		LA (50) 11:40-12:30		Lunch (25) 12:30-12:55	
Grade 3	HR	Math 60 9:10-10:10		L/A (40) 10:10-10:50		R (25) 10:50-11:15		3rd Special (50) 11:40-12:30	
Grade 4	HR	Math 60 9:10-10:10		L/A (40) 10:10-10:50		4th Special (50) 10:50-11:40		R (25) 11:40-12:05	
Grade 5	HR	Math 60 9:10-10:10		SS/SC (60) 10:10-11:10		L/A (30) 11:10-11:40		R (25) 11:40-12:05	

2018-19 Radnor High School Schedule

Radnor High School students may have eight classes on their schedule for the school year, although the required number of classes students must take in any given school year is 6.5. Some classes meet every other day for the school year, or every day for one semester, and are thus deemed half-credit classes.

Students at Radnor High School eat lunch when unassigned 5th or 6th period. For example, a student who has an A5 class would attend class from 10:52-11:33 a.m. If that student was assigned a B6 class, he/she would report to that class from 11:38 a.m.-12:19 p.m. The student would then be unassigned for C and would eat lunch from 12:24-12:54 p.m.

A different student unassigned for A would eat lunch from 10:52-11:22 a.m., then would be assigned classes B5 and 6C. Radnor High School values having lunches begin prior to 1 p.m. to provide the optimum learning experience for the student body.

Radnor High School's current bell schedule runs on a modified block format. On Mondays, Tuesdays, and Fridays, students at RHS have a traditional schedule with 8 class periods that have 41 minutes of instructional time each.

2018-19 School Year Schedule at Radnor High School

**RADNOR HIGH SCHOOL
BELL SCHEDULE
8 BLOCK DAYS (M, T, F)**

8 Period Days (Mondays, Tuesdays, Fridays)

	<u>Begin</u>	<u>End</u>
HR	7:35 AM	7:44 AM
Period 1	7:48 AM	8:29 AM
Period 2	8:34 AM	9:15 AM
Period 3	9:20 AM	10:01 AM
Period 4	10:06 AM	10:47 AM
A	10:52 AM	11:22 AM
Period 5	11:27 AM	11:33 AM
B	11:38 AM	12:08 PM
Period 6	12:13 PM	12:19 PM
C	12:24 PM	12:54 PM
Period 7	12:59 PM	1:40 PM
Period 8	1:45 PM	2:27 PM

On 5 period days, lunch is assigned and appears on student schedules.

A Lunch	Period A5	Period A5
Period 5B	B Lunch	Period B6
Period 6C	Period 6C	C Lunch

BOLD times indicate when bells will ring

4 Period Days (Wednesdays, Thursdays)

	<u>Begin</u>	<u>End</u>
HR	7:35 AM	7:44 AM
Block 1 or 2	7:48 AM	9:08 AM
Community Pd.	9:13 AM	9:38 AM
Block 3 or 4	9:43 AM	11:03 AM
A	11:08 AM	11:38 AM
Block 5 or 6	11:42 AM	11:46 AM
B	11:50 AM	12:20 PM
Block 5 or 6	12:24 PM	12:28 PM
C	12:32 PM	1:02 PM
Block 7 or 8	1:07 PM	2:27 PM

On block days, 5th or 6th period classes will be designated for specific lunches.

Lunch	Block 5 or 6 (Part 1)	Block 5 or 6
Block 5 or 6	Lunch	
Lunch	Block 5 or 6 (Part 2)	

BOLD times indicate when bells will ring

On Wednesdays and Thursdays, RHS students have a block schedule with 4 classes that have 80 minutes of instructional time each. On Wednesdays, students go to their odd class periods (1, 3, 5, 7) and on Thursdays students attend their even class periods (2, 4, 6, 8).

These block days afford teachers the opportunity to provide unique learning experiences for students, such as having in-class debates, bringing in guest speakers, facilitating science labs, and more.

Also, unique to Block Days is Community Period. Community Periods provide two, 25-minute periods per week for various meetings to occur, tutoring to take place, and for club meetings, activities and grade-level assemblies to be held.

Several changes are proposed for the high school’s schedule.

8 Period RHS Schedule If 8:30 AM Start Time

To achieve an 8:30 a.m. high school start time while lessening the impact on after-school sports and the community’s use of Radnor High School facilities, the RHS schedule was closely analyzed for efficiencies. As a result, passing time between classes is proposed to be shortened by one minute, from five minutes to four. Homeroom time is also proposed to be eliminated. Considered non-instructional time, homeroom time is not able to be counted toward the required school hours in the PA School Code under §51.61, Instructional School

Day and School Year. Eliminating homeroom would also eliminate one passing transition from homeroom to first period. Additional time would be added to eighth period to account for early dismissals for athletic events.

With the elimination of homeroom, a link to the video of morning announcements would be provided via the RHS Learning Management System, Schoology, which would allow students to watch during the school day when their time allows. Morning announcements would also loop on the television in the cafeteria throughout the school day. Distribution of any forms, passes or other materials to students would be done in a student’s first period classes. For 15-20 minutes prior to the start of first period, the Emotional Support room would be staffed by a Special Education teacher to provide both drop-in and regularly scheduled check-ins for students who may benefit from a more structured start to their school day.

8 Period RHS Schedule If 8:30 a.m. Start Time and Earlier Lunches

RADNOR HIGH SCHOOL ALTERNATE BELL SCHEDULE (earlier lunches) 8 Period Days (Mondays, Tuesdays, Fridays)				
	Begin	End		
Period 1	8:30 AM	9:11 AM		
Period 2	9:15 AM	9:56 AM		
Period 3	10:00 AM	10:41 AM	On 8 period days, lunch is assigned and appears on student schedules.	
A	10:45 AM	11:15 AM	A Lunch	Period A5
Period 4	11:19 AM	11:26 AM	Period 5B	Period A5
B	11:30 AM	12:00 PM	B Lunch	Period B6
Period 5	12:04 PM	12:11 PM	Period 6C	Period B6
C	12:15 PM	12:45 PM	C Lunch	
Period 6	12:49 PM	1:30 PM		
Period 7	1:34 PM	2:15 PM		
Period 8	2:19 PM	3:04 PM		

The only difference between the above and previous schedules for Mondays, Tuesdays, and Fridays is that the above schedule moves lunches forward. This “earlier

lunches” schedule modifies the current A5, 5B, B6, 6C schedule to an A4, 4B, B5, 5C plan. RHS administration recommends this alternate bell schedule in place of the previous A5, 5B, B6, 6C model.

4 Block RHS Schedule If 8:30 a.m. Start Time

RADNOR HIGH SCHOOL BELL SCHEDULE			
4 Block Days (Wednesdays, Thursdays)			
	Begin	End	
Block 1 or 2	8:30 AM	9:50 AM	
Block 3 or 4	9:54 AM	11:14 AM	
A	11:18 AM	11:48 AM	Lunch
Block 5 or 6	11:52 AM	11:57 AM	
B	12:00 PM	12:30 PM	Block 5 or 6
Block 5 or 6	12:33 PM	12:38 PM	
C	12:42 PM	1:12 PM	
Block 7 or 8	1:16 PM	2:41 PM	
Community Pd.	2:45 PM	3:04 PM	
BOLD times indicate when bells will ring			

Like the previously proposed 8 Period schedules, the above 4 Block schedule on Wednesdays and Thursdays also eliminates homeroom. However,

distinct to this schedule is the placement of Community Period. For the 2018-19 school year, Community Period falls between Blocks 1 and 3 on Wednesdays and between Blocks 2 and 4 on Thursdays. This proposed schedule shortens Community Period by six minutes and moves it to the end of the school day to mitigate lost class time due to early dismissals for athletic events.

Instructional Time

The 1949 Pennsylvania School Code sets forth the required instructional time for public schools in the state under §51.61. Instructional School Day and School Year.

Per PA School Code, the minimum length of an instructional school day by grade level is:

- Nursery school: 2 hours
- Kindergarten: 2.5 hours
- Grades 1-8: 5 hours
- Grades 9-12: 5.5 hours

Further, “in grades K-12, schools shall be in session a minimum of 180 days of instruction or the equivalent clock hour requirement, with prior approval of the Board. Upon request, the Board may, when a meritorious educational program warrants, approve a school year containing a minimum of 990 secondary or 900 elementary hours of instruction as the equivalent of 180 school days.”

RHS Instructional Time Calculations

Mondays, Tuesdays and Fridays

- 332 instructional minutes per day x 3 days per week=
996 instructional minutes on M, T, F

Wednesdays and Thursdays

- 344 instructional minutes per day x 2 days per week=
688 instructional minutes on W, Th

Totals

996 instructional minutes (M, T, F) + 688 instructional minutes (W, Th)=

1,654 instructional minutes per week

1,654 instructional minutes per week/5 days per week=

330.8 average instructional minutes per day

330.8 average instructional minutes a day x 180 school days a year=

62,852 instructional minutes per school year

62,852 instructional minutes/60 minutes per hour=

1,047.5 instructional hours per school year

Instructional Time Conclusion

Modifications to the Radnor High School schedule to achieve an 8:30 a.m. start time fall in line with state requirements for instructional time.

Radnor High School's new schedule would afford students 6.5 hours per day for instructional time per school day, exceeding the 5.5-hour state requirement. In an academic year, students will exceed the 990 hours of state-required instructional time.

TRANSPORTATION



IN THIS SECTION

1. Morning Bus Transportation
(8:30 a.m. RHS Start)
2. Afternoon Bus Transportation
(8:30 a.m. RHS Start)
3. Morning and Afternoon Student Supervision
4. Bus Safety in the Afternoon

This report is subject to change at any time based on ongoing discussions and investigation. It is current as of Dec. 6, 2018.

Transportation logistics remain a major topic of discussion and investigation. In addition to transporting RTSD students, the district's bus fleet transports hundreds of private school students each day.

Proposed MORNING Transportation Model: 8:30 a.m. RHS Start

The current morning bus transportation model at Radnor Township School District involves the pick up of Radnor High School and private school students first followed by a drop-off at RHS. Students are then picked up and dropped off at Radnor Middle School and St. Katharine's. Finally, elementary school students are picked up and transported to their respective schools. A new transportation model would need to be put in place to accomplish an 8:30 a.m. start time at RHS.

RTSD Elementary, Middle and High Schools

7 – 7: 45 a.m.

Begin picking up RMS and St. Katharine's students (17 buses needed)

Proposed RMS start time of 8 a.m.



7:50 – 8:15 a.m.
 Begin picking up RHS students (21 buses needed)
 Proposed RHS start time of 8:30 a.m.

8:25 – 9 a.m.
 Begin picking up students for RTSD elementary schools (27 buses needed)
 Proposed elementary start time of 9:15 a.m.

Private Schools and Special Needs Schools

6:45 – 7:15 a.m.
 Pick up private school students throughout RTSD
 Meet at Radnor High School for necessary transfers

7:15 – 8 a.m.
 Transport students to private schools (10-12 buses needed)

7:15 – 9 a.m.
 Transport students to special needs schools (14 buses needed)

AFTERNOON Transportation Model: 8:30 a.m. RHS Start

The current afternoon bus transportation model at RTSD involves the pick up of RHS students first, followed by the drop-off at their bus stops. Students are then picked up from Radnor Middle School and

Length of Time of Bus Rides for Students Each Afternoon

	SHORTEST RIDE	LONGEST RIDE	AVERAGE
55-Minute Later RHS Start*	31 minutes	44 minutes	37.6 minutes

taken to their bus stops. Finally, elementary school students are picked up at each school and transported to their respective bus stops.

Should an 8:30 a.m. start time be implemented at Radnor High School, RHS and Radnor Middle School would both dismiss at or near 3 p.m. (3 p.m. at RMS and 3:04 p.m at RHS). Due to this close proximity in dismissal times, a new afternoon bus transportation model would need to be implemented.

This new proposed afternoon bus transportation is admittedly a work in progress and requires additional study and evaluation. As it currently stands, the new model proposes that half of the buses pick up RHS students at 3 p.m. and half of the buses pick-up RMS students at 3 p.m. The buses that started at RMS would then travel to RHS and pick-up RHS students, before departing to take students home. Likewise, the buses that started at RHS would travel to RMS to pick up the remainder of the students at RMS, before taking students home.

The additional time for the bus runs under this model would be longer, however the district is investigating ways to mitigate some of the time by the increasing the efficiency of the bus trips.

Private Schools and Special Needs Schools

This is a main area of investigation that is still in progress. A more detailed routing plan with associated costs is scheduled to be presented in February/March 2019.

RTSD Elementary, Middle and High Schools

3 – 3:09 p.m.

Begin picking up at RMS and RHS (22 buses needed)

Proposed RMS dismissal time: 3 p.m.

Proposed RHS dismissal time: 3:04 p.m.

3:20 – 3:27 p.m.

Buses that left RHS arrive at RMS and vice versa to finish picking up students, then depart to take them home.

3:50 p.m.

Begin picking up students from IES, RES and WES (27 buses needed)

Proposed IES, RES and WES dismissal time: 3:45 p.m.

Morning and Afternoon Supervision of Students at RMS

For the 2018-19 school year, the first bus typically arrives at RMS around 7:40 a.m. and the last bus usually arrives around 7:56 a.m. Students who arrive on the first fleet of buses go to the cafeteria until 7:50 a.m. to socialize with their peers in a supervised setting. At 7:50 a.m., students are dismissed to their lockers. The bell rings at 8 a.m. for students to begin their advisory period.

Teachers' hours at RMS are from 7:35 a.m. to 3:05 p.m. Teachers assist with supervising bus arrival and dismissal. The teaching staff can only leave after the buses have departed for the day. Teaching support staff (paraeducators) finish their workday at 3 p.m. and do not assist with supervision of arrival or dismissal.

To ensure proper supervision of students, RMS administration has the option of staggering start times for RMS faculty and staff. Radnor High School currently employs this practice. Secretarial staff start and end times are staggered to ensure coverage both before and after school. The first secretarial staff member arrives at RHS at 6:15 a.m. and ends the work day at 2:45 p.m. The last secretarial staff member arrives at 8 a.m. and ends the work day at 4:30 p.m.

Radnor High School teachers also stagger their start times. Some begin their work day at 7:15 a.m. and end at 2:45 PM, while others begin at 7:30 a.m. and end at 3 p.m. This practice allows many teachers the ability to schedule time to meet with students for extra

help before or after school. The Math Department in particular uses this model to provide assistance before and after school in the Math Center.

According to estimates regarding the length of time it would take to complete the morning bus trips should RHS adopt an 8:30 a.m. start time, the first buses may arrive at RMS as much as five minutes earlier than they currently do (7:35 a.m. versus 7:40 a.m.). Again, RMS teachers begin the work day at 7:35 a.m. For the 2018-19 school year, RMS teachers are also assigned cafeteria coverage as a morning duty.

To ensure sufficient student supervision at RMS in the morning and afternoon, it is recommended that administration work with the Radnor Township Education Association (RTEA) to stagger teacher start and end times to provide adequate student supervision in the mornings and afternoons of the student day. For example, half of the RMS teaching staff could start their work day at 7:30 a.m. and end at 3 p.m., while the other half could begin at 7:50 a.m. and end at 3:20 p.m. Should obstacles to faculty supervision of RMS students become apparent, paraeducators could be used to provide supervision of RMS students before and after school.

Morning and Afternoon Supervision of Students at RHS

For the 2018-19 school year, the first bus arrives at RHS at approximately 7:03 a.m. and the last bus around 7:18 a.m. Many of

the students who arrive on the first fleet of buses go to the cafeteria to enjoy breakfast and socialize. The cafeteria is supervised by an RHS administrator. Students may also go to the library or the Quiet Study Area in the International Café. They can also converse with friends in the auditorium lobby or meet with teachers for extra help before school. The bell rings at 7:30 a.m. for students to begin moving to their homerooms.

As reviewed previously, teachers' hours at RHS are begin at 7:15 a.m. and end at 2:45 p.m. or begin at 7:30 a.m. and end at 3 p.m. Teachers at RHS are assigned duties, however none take place before 7:30 a.m. or after the school day ends at 2:27 p.m.. Paraeducators end their work day at 2:30 p.m. and do not assist in supervision of students during arrival or dismissal.

Should the proposed schedule for RHS be 8:30 a.m. to 3:04 p.m., the first buses are anticipated to arrive at RHS around 8:15 a.m. Radnor High School administration would continue to provide supervision in the cafeteria. The teacher work day would continue to be staggered.

Bus Safety in the Afternoon

The adoption of a new afternoon bus transportation model would combine the afternoon bus pick-ups for RHS and RMS. This model is used in many school districts nationally and locally, including Garnet Valley, Great Valley, Owen J. Roberts, and Unionville-Chadds Ford.

Some benefits of this model include a more efficient transportation structure, a reduction in the number of buses needed, and a shortening of the number of stops on a bus route.

There is a valid concern regarding the potential for negative interactions between middle and high school students on the bus. It is important to note that a number of Radnor Township elementary and middle school students who attend private schools currently ride the bus with RHS students in the morning and get dropped off at RHS to transfer onto other buses to their private schools. This busing structure has worked for some time without issue.

Still, other districts that utilize this afternoon bus transportation model take a number of steps to prevent and combat negative behavior on the bus, such as having middle school students sit in the front half of the bus and high school students in the back. In some districts, a bright yellow line is taped to the floor at the midpoint of the bus.

Bus drivers are provided professional development every 12 to 24 months on bullying prevention, identification and intervention. The National Association for Pupil Transportation has free comprehensive training materials available for school districts. RTSD bus drivers already get Safe Schools training, which contains a module on anti-bullying. Cameras will continue to be utilized on the buses and existing signage will be featured to let students know that cameras are

active on each bus. Bullying is also expressly addressed in official district policies and in each school's student handbook.

Radnor Township School District should include survey questions about bus conduct/bullying/student overall bus experience this school year (2018-19) to gather baseline data from students and bus drivers. Surveys at the mid-point, and again at the end of next school year (2019-20) would provide valuable feedback as to student experiences. This data could be used to gauge whether the current measures are working. In cases where specific buses have high instances of student conflict, other districts have utilized bus aides to monitor student behavior. This measure could be implemented if the surveys in 2019-20 warrant an adult presence on a particular bus.

CLUBS, ATHLETICS & ACTIVITIES



IN THIS SECTION

1. Elementary Clubs and Activities
2. RMS Athletic Practices and Competitions
3. RHS Athletic Practices and Competitions

This report is subject to change at any time based on ongoing discussions and investigation. It is current as of Dec. 6, 2018.

Athletics and extracurricular activities are an important aspect of a student's life. When considering an 8:30 a.m. start time at RHS, the impact on sports and clubs was carefully considered.

Elementary School Clubs and Activities

Ithan, Radnor and Wayne elementary schools each offer before- and after-school clubs and activities that would not be impacted by starting and ending the school day 15 minutes later.

Radnor Middle School Athletic Practices and Competitions

The proposed 8:30 a.m. start time at RHS would not result in a change to Radnor Middle School's current daily schedule (8 a.m. to 3 p.m.). Thus, the only impact to RMS sports' practices/games would be if coaches were employees at RHS. These employees would have their start and end times adjusted to ensure they were able to complete their job functions at RHS and get to practices at RMS in time.



Radnor High School Athletic Practices and Competitions

Through an examination of practice schedules in recent history, most sports teams do not hold practices prior to the start of the school day. An exception is the RHS swimming and diving team. To improve student sleep, regardless of which option is chosen to address adolescent sleep needs, all morning practices are recommended to be eliminated for RHS sports, clubs and activities.

By finding efficiencies in the Radnor High School schedule, delaying the RHS start time to 8:30 a.m. only requires the end of school to be pushed back by 37 minutes (from 2:27 PM to 3:04 PM). After-school practices would begin as soon as classes are over, essentially delaying practice schedules by approximately 37 minutes.

Radnor High School belongs to the Central Athletic League (CAL), which has standardized competition start times. However, the home team maintains purview over its facilities. Most athletic contests begin at 3:45 p.m., but home teams may move games earlier or later for a variety of reasons, including field conditions.

All of the schools in CAL value instructional time and work diligently to ensure that students do not miss class. Currently, students depart RHS at 2:35 p.m. for a 3:45 p.m. contest. Radnor High School has requested that CAL explore moving all start times from 3:45 to 4 p.m.

Under the 8:30 a.m. start time, RHS student-athletes would be dismissed from classes at 3 p.m. (four minutes early) for athletic contests to minimize the loss of instructional time and not impact their arrival at a contest and associated warm-up time. To account for lost instructional time, the last period of each 8-Period day would be extended by four minutes and 4-Block days would end with Community Period. A 15-minute delay in competition start times should also allow schools to hold all scheduled games with their existing field space.

Baseball and Softball

Varsity: 3:45 p.m. start time, 22 games (Softball has occasional night games)
Junior Varsity: 3:45 p.m. start time, 22 games
9th Grade: 3:45 p.m. start time, 14 games

Basketball (Boys and Girls)

Varsity: 7 p.m. start times
Junior Varsity: 5:30 p.m. start times
9th Grade: 3:45 p.m. start times

Cheerleading

Varsity: All Friday night events
Junior Varsity: 3:45 p.m. for home JV games, approximately 6 per year

Crew (Boys and Girls)

Fall Crew
Boys and girls practice Tuesdays, Wednesdays and Thursdays, 3-5 p.m.

Winter Crew

Boys team practices at RHS

Girls team practices at the Boathouse Tuesdays, Wednesdays and Thursdays

Spring Crew

Boys and girls practice Tuesdays, Wednesdays, Thursdays and Fridays, 3-5 p.m.

Practice on Saturdays and meets on Sundays

Cross Country (Boys and Girls)

8 after school meets that start at 4 p.m.

Diving and Swimming (Boys and Girls)

20 after school meets that start at 3:45 p.m.

Field Hockey

Varsity: 3:45 p.m. start time, 18 games

Junior Varsity: 5 p.m. start time, 18 games

Junior Varsity B: 3:45 p.m. start time, 12 games

Football

Varsity: All games on Friday nights at 7 p.m.

Junior Varsity: 3:45 p.m. start times on Monday afternoons, 10 games

9th Grade-: 3:45 p.m. start on Thursday afternoons, 7-9 games a season

Golf

Varsity and Junior Varsity: 18 matches that start at 3 p.m. or 3:30 p.m.

Note: Start times are determined by the golf course or country club. Early dismissals may be unavoidable. As many contests as possible should be scheduled for Wednesdays and Thursday to take advantage of the Community Period time.

Ice Hockey (Boys and Girls)

Ice Hockey start times vary, but games are in the evening. Practices, however, and ice time for these practices, are right after school in West Chester, typically twice a week. For the 2018-19 school year, ice times for practices for our two teams are:

- Boys: Sundays, 7:10-8:10 p.m. and Wednesdays, 3:25-4:40 p.m.
- Girls: Tuesdays, 3:30-4:30 p.m. and occasionally Sundays, 5:10-6:10 p.m.

Finding ice time that would account for the delay in the high school's schedule may result in higher costs, and/or different availability of practice time. However, if this proves to be a significant obstacle, practices should look to be scheduled for Wednesdays and/or Thursdays. Students who participate in Ice Hockey could be dismissed at the conclusion of their last period (2:41 p.m.), meaning students would only miss Community Period to ensure they get to the rink on time.

Indoor Track (Boys and Girls)

Most Indoor Track meets take place on Saturdays

Boys Lacrosse

Varsity: 18 games, with 10 starting at 7 p.m. and remaining starting at 3:45 p.m.

Junior Varsity: 18 games, 10 of them starting at 5 p.m.

Junior Varsity B: 12 games starting at 3:45 p.m.

Girls Lacrosse

Varsity: 18 games with the majority starting at 3:45 p.m.

Junior Varsity: 18 games starting at 5 p.m.

Junior Varsity B: 12 games starting at 3:45 p.m.

Boys Soccer

Varsity: 18 games with about 6 starting at 3:45 p.m.; others at 7 p.m.

Junior Varsity: 18 games with about 6 starting at 3:45 p.m.; others at 5:30 p.m.

9th Grade: 10 games all starting at 3:45 p.m.

Girls Soccer

Varsity: 18 games, with majority starting at 3:45 p.m.

Junior Varsity: 18 games, with majority starting at 3:45 p.m.

Junior Varsity B: 10 games all starting at 3:45 p.m.

Squash

Competitions are scheduled with both public and private schools, and currently start between 3 and 4:30 p.m. depending on location. Practices are right after school at Fairmount.

Tennis (Girls in the Fall; Boys in the Spring)

Varsity and Junior Varsity: 18 matches, all starting at 3:45 p.m.

Track and Field (Boys & Girls)

10 after-school meets that start at 3:30 or 3:45 p.m.

Volleyball

Varsity: 18 matches starting at 3:45 p.m. with an occasional night game

Junior Varsity: 18 matches that start right after Varsity match

Wrestling

All wrestling matches start at 7 p.m. during the school week

COMMUNITY YOUTH SPORTS

IN THIS SECTION

1. Minimal Impact on After-School Community Activities



This report is subject to change at any time based on ongoing discussions and investigation. It is current as of Dec. 6, 2018.

After School Community Activities and Youth Sports

The impact on community sports and activities due to a delayed start will be minimal. On competition days, games will be delayed by 15 minutes from their current start times. Practices for RHS sports teams would be delayed by approximately 37 minutes. Currently on practice days, fields are reserved for RHS athletics until 5:30 p.m. or 6 p.m., depending on the day and field. A transition period of 15 minutes falls between the end of high school athletic practices and the start of community/youth practices.

The groups with the most significant and recurrent field usages in the fall are Wayne Youth Football, Radnor Youth Lacrosse, and the Radnor Soccer Club. While field usage would be pushed back to 6:30 p.m. and 6:45 p.m., respectively, the goal of having all teams completed with their practices before 9:30 p.m. could be met a number of ways. Youth groups could increase the number of teams they schedule to practice on Encke and Prevost fields. Currently, groups do not fully use the entire field space on Prevost and Encke fields every night they have reserved the respective turfs.

OTHER CONSIDERATIONS



THIS THIS SECTION

1. Elementary Before and After School Care
2. Technical School Considerations
3. Staff and Faculty Contractual Days



This report is subject to change at any time based on ongoing discussions and investigation. It is current as of Dec. 6, 2018.

Elementary Before and After School Care

The three elementary schools in the Radnor Township School District have similar drop-off procedures in the morning. Ithan Elementary School serves as an exchange center for private and parochial school students. Buses arrive as early as 8:12 a.m. to bring non-Radnor students to IES for Delaware County Intermediate Unit (DCIU) programming. These buses are owned by a number of other school districts and the students they transport are not Radnor residents and are supervised by the DCIU.

Currently, all three of RTSD's elementary schools have buses that begin arriving at each school around 8:40 a.m. Each school ensures faculty and staff supervise the arrival of buses and safety of students. Faculty and staff assist with getting students off the buses and out of cars in the morning and guide them into the school. Buses finish drop off at each school a few minutes before school begins at 9 a.m.

Teachers' work day at all three elementary schools begins at 8:15 a.m. and ends at 3:45 p.m. Elementary teachers typically have meetings scheduled prior to students arriving at school. Students are permitted in each school building at 8:45 p.m. and parent drop-off for students who do not ride the bus typically begins at 8:45 a.m. Paraeducators at the

three elementary schools begin their work days at 8:45 a.m. and end at 3:45 p.m.

Currently, each elementary school provides before- and after-school care for families through the outside agency Family Support Services (FSS). Families may elect, at their own expense, to obtain before and/or after-school care through FSS.

Before school care through FSS runs from 7:30 to 9 a.m. and after school care runs from 3:30 to 6 p.m. Family Support Services caps their program based on space availability and staffing constraints. Schools also have before- and after-school clubs and activities students can join.

The RTSD Adolescent Sleep and School Start Time Committee recommends the district revisit its current agreement with FSS to expand the number of students who can be served and extend the duration of before school care by 15 minutes with the understanding that parents may need to absorb additional costs.

Technical School Considerations

Each year, approximately 25 Radnor High School students attend Delaware County Technical Schools (DCTS). DCTS boasts 21 programs including, but not limited to, Construction Technology, Culinary Arts, Engineering and Computer Science, Health and Biosciences, and

Hospitality Services. Campuses are located throughout Delaware County in Aston, Folcroft, and Marple. The start times for the morning sessions for these schools range from 7:45 a.m. to 10:30 a.m.

All schools in Delaware County are permitted to send their students to either session. Most students at Radnor High School elect to go in the morning session, although some students do attend the afternoon sessions.

Morning Delaware County Technical School Sessions

Currently, the majority of RHS students who attend Delaware County Technical Schools (DCTS) go to 10 a.m. session versus the 1 p.m. session. These students are picked up at the same time with their peers who attend RHS full time and transported to their DCTS programs.

The Medical Careers program is a unique program not housed at the DCTS campuses. Instead, students go to Bryn Mawr or Lankenau Hospitals from 6:45 to 8:45 a.m. Afternoon sessions of Medical Careers are available.

Afternoon DCTS Session Considerations

- Afternoon Medical Careers is 11:45/12 p.m. to 1:45/2 p.m.
- DCTS' Afternoon Session Runs from 11:30 a.m. to 2:15 p.m.

- General Construction (Skill Start Building Trades) is only held in the morning at Folcroft. No RHS student currently participates in this program.
- Emergency Services - EMT is only held in the morning at Folcroft. Currently, one RHS senior is participating in this program.

Chester County Intermediate Unit Pickering Campus Programs

A small number of Special Education students attend the Chester County Intermediate Unit's Technical College High School program at the Pickering Campus. The Day at Pickering begins at 7:45 a.m. and ends at 10:12 a.m. Students depart Pickering to return to RHS at approximately 10:40 a.m. There are also afternoon programs.

Scheduling for DCTS and Cat-Pickering Students

The RTSD School Board requires that students must earn 22.5 credits to graduate. Students must earn credits in the following areas to be eligible for a diploma:

- 4 credits in English
- 3 credits in Social Studies
- 3 credits in Mathematics
- 3 credits in Science (Biology, Chemistry, and Physics)
- 2 credits in Arts and Humanities
- 2 credits in Physical Education
- 1 credit in Health
- .5 credit in Technology or Business

Students at Radnor High School do not begin attending programs at DCTS or Cat-Pickering until their sophomore year at the earliest. A mock schedule was created to ensure that Radnor students who wish to participate in DCTS or Pickering campus programs would be able to earn the credits necessary to graduate with their peers.

Faculty and Staff Contractual Days

No provisions in the employee Collective Bargaining Agreements explicitly state the start and end times for RTSD schools.

Final School Start Time Recommendation from Radnor Township School District Sleep and School Start Time Committee

Updated April 8, 2019; First Published April 5, 2019

After completing additional work and gathering additional feedback since the Initial Recommendation was offered on Nov. 13, 2018, the RTSD Sleep and School Start Time Committee now offers a Final Recommendation of a later school start time at Radnor High School (from 7:35 a.m. to 8:30 a.m.) and a later school end time (from 2:27 p.m. to 3:10 p.m.)

To meet the high school start time of 8:30 a.m. as advised by major medical organizations, the committee is recommending changes to the middle and elementary school start times to meet the district's bus transportation needs. The committee recommends a later school start time at Ithan, Radnor and Wayne elementary schools (from 9 a.m. to 9:07 a.m.) and a later school end time (from 3:30 p.m. to 3:40 p.m.). The committee also recommends a change to the Radnor Middle School schedule, from 8 a.m.-3 p.m. to 7:50 a.m.-2:40 p.m.



FINAL RECOMMENDATION (Updated April 8, 2019)

THIS THIS SECTION

- 1. REVIEW OF INITIAL RECOMMENDATION
- 2. REVIEW OF ADDITIONAL SCHEDULES INVESTIGATED BASED ON FEEDBACK
- 3. REVIEW OF FINAL RECOMMENDATION
- 4. TRANSPORTATION INFORMATION
- 5. METRICS FOR EVALUATION
- 6. OTHER CONSIDERATIONS

This addendum is current as of April 8, 2019 and may be updated at any time based on additional information.

Overview

Since the Radnor Township School District Sleep and School Start Time Committee* presented its initial recommendation at the November 13, 2018 School Board Curriculum Committee meeting, there has been significant progress in refining the recommendation as a result of extensive additional research and discussion with various individuals and groups. This addendum to the report outlines the work completed since November 13, 2018, the resulting action steps, and offers a final school start time recommendation.

Why Change School Start Times?

There is scientific evidence that insufficient sleep adversely affects teens.

Health	<ul style="list-style-type: none">• Depressed Mood• Anxiety• Suicidal Ideation• Decreased Emotional Regulation• Increased Weight Gain and Obesity• Increased Substance Use and Abuse
Safety	<ul style="list-style-type: none">• Increased Motor Vehicle Crashes• Increased Athletic Injuries• Increased Risk-Taking Behaviors• Increased Physical Fights/Bullying
Performance	<ul style="list-style-type: none">• Decreased Concentration• Decreased Problem-Solving Ability• Difficulty with Memory• Poorer Cognitive Efficiency• Decline in Academic Performance

*As the study entered its next stage after the initial recommendation was offered on Nov. 13, 2018, the committee chose to omit “Adolescent” from its name going forward to better reflect the study’s inclusion and review of schedules at RTSD middle and elementary schools.



Initial Recommendation Offered on Nov. 13, 2018: Delay Radnor High School Start By 55 Minutes

Level	Start Time	End Time	Length of Day
High	8:30 a.m.	3:04 p.m.	6 hours 34 mins
Middle	8:00 a.m.	3:00 p.m.	7 hours
Elementary	9:15 a.m.	3:45 p.m.	6 hours 30 minutes

WHY DEVELOPED Allowed high school students to go to school 55 minutes later, which meets sleep recommendations put forth by major medical organizations. Also did not impact RMS schedule.

WHY ELIMINATED

- Subsequent research after recommendation regarding transportation led to determination that option would require a minimum of 8 additional buses and 8 additional drivers as well as contracted athletic transportation.
 - Est. cost \$1.12 million
- Subsequent parent feedback after recommendation regarding concerns with RHS and RMS students being required to ride the same bus
- Subsequent teacher and parent feedback concerning 15-minute later start and end times for elementary students



Current Schedule
RHS: 7:35 a.m.-2:27 p.m.
RMS: 8:00 a.m.-3:00 p.m.
ES: 9:00 a.m.-3:30 p.m.

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For more information and updated FAQs on the study of sleep and school start times in RTSD, visit www.RTSD.org/sleep.

2

Additional Options Explored Based on Feedback: Concurrent Start for High and Middle School

Level	Start Time	End Time	Length of Day
High	8:15 a.m.	2:45 p.m.	6 hours 30 mins
Middle	8:15 a.m.	3:10 p.m.	7 hours
Elementary	9:00 a.m.	3:30 p.m.	6 hours 30 mins

WHY DEVELOPED:

- Concurrent two-tier bus runs in the morning would avoid the necessity to expand cost of contracted athletic busing
- Both RHS and RMS start later

WHY ELIMINATED:

- Completed research regarding transportation led to determination that option would require a minimum of 8 additional buses and 8 additional drivers
 - Est. cost \$1.12 million



- RHS and RMS students would be required to ride the same bus in morning
- RHS start time does not meet sleep recommendations from major medical organizations

Current Schedule
RHS: 7:35 a.m.-2:27 p.m.
RMS: 8:00 a.m.-3:00 p.m.
ES: 9:00 a.m.-3:30 p.m.

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Each of the following five bell schedules was developed in response to stakeholder feedback after the Initial Recommendation (above) was offered on Nov. 13, 2018.

1

Additional Options Explored Based on Feedback: Elementary Starting First

Level	Start Time	End Time	Length of Day
High	8:15 a.m.	2:45 p.m.	6 hours 30 mins
Middle	8:45 a.m.	3:30 p.m.	6 hours 45 mins
Elementary	7:45 a.m.	2:15 p.m.	6 hours 30 mins

WHY DEVELOPED Feedback from elementary teachers indicated the initial recommendation of a 3:45 p.m. end time for elementary students was too late when considering the educational and developmental needs of younger students. A schedule option with earlier elementary start and end times was thus developed.

WHY ELIMINATED

- Parent concerns about elementary students waiting for buses in the morning during civil twilight
- Parent concerns about the possibility of the need for additional after-school care
- Does not meet the sleep recommendations for high school students per major medical organizations
- Parents felt this schedule might be shifting a sleep issue from one age group to another and negatively impact the elementary level
- Would require 4 additional buses and 4 additional bus drivers
 - Est. cost \$560,000
- Impact on RMS athletic competitions



Current Schedule
RHS: 7:35 a.m.-2:27 p.m.
RMS: 8:00 a.m.-3:00 p.m.
ES: 9:00 a.m.-3:30 p.m.

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3

Additional Options Explored Based on Feedback: "Push" Start Time 20 Minutes at Each School

Level	Start Time	End Time	Length of Day
High	7:55 a.m.	2:47 p.m.	6 hours 52 mins
Middle	8:20 a.m.	3:20 p.m.	7 hours
Elementary	9:20 a.m.	3:50 p.m.	6 hours 30 mins

WHY DEVELOPED:

- Maintains three-tier busing system and does not increase contracted services for busing to RHS athletic competitions
- Option mirrors later school start time schedules put into place by other districts (Phoenixville, Unionville, under consideration in Tredyffrin-Easttown)

WHY ELIMINATED:

- RHS start time does not meet sleep recommendations from major medical organizations
- Significant impact to RMS athletics
- Would require 1 additional bus and 1 additional driver
 - Est. cost \$140,000
- Later end to elementary school day would result in some students getting home close to 4:45 p.m. or later



Current Schedule
RHS: 7:35 a.m.-2:27 p.m.
RMS: 8:00 a.m.-3:00 p.m.
ES: 9:00 a.m.-3:30 p.m.

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4

Additional Options Explored Based on Feedback: "Flip" Elementary and Secondary Start Times

Level	Start Time	End Time	Length of Day
High	8:40 a.m.	3:15 p.m.	6 hours 35 mins
Middle	9:10 a.m.	4:00 p.m.	6 hours 50 mins
Elementary	8:00 a.m.	2:30 p.m.	6 hours 30 mins

WHY DEVELOPED:

- Maintains three-tier busing system and does not increase contracted services for busing to RHS athletic competitions
- Both RHS and RMS start times exceed sleep recommendations from major medical organizations
- Feedback from elementary teachers indicated the initial recommendation of a 3:45 p.m. end time for elementary students was too late when considering the educational and developmental needs of younger students. A schedule option with earlier elementary start and end times was thus developed.

WHY ELIMINATED:

- Significant impact to RMS athletics with 60-minute later end time
- Middle school students would arrive home late in day
- Would require minimum of 4 additional buses and 4 additional drivers
 - Est. cost \$560,000
- Significant impact on before- and after-school care, with the possibility of more parents needing care in the afternoon
- Impact on township youth sports program held at RMS
- Major schedule shift for elementary and middle school families
- Most disruptive change for families at all levels of all schedules considered



Current Schedule
 RHS: 7:35 a.m.-2:27 p.m.
 RMS: 8:00 a.m.-3:00 p.m.
 ES: 9:00 a.m.-3:30 p.m.

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5

Final Recommendation: "Secondary Shuffle"

Level	Start Time	End Time	Length of Day
High	8:30 a.m.	3:10 p.m.	6 hours 40 mins
Middle	7:50 a.m.	2:40 p.m.	6 hours 50 mins
Elementary	9:07 a.m.	3:40 p.m.	6 hours 33 mins

WHY DEVELOPED:

- Maintains three-tier busing system and does not increase contracted services for busing to RHS athletic competitions
- RHS start time meets sleep recommendations from major medical organizations
- Minimal impact on both middle and elementary school schedules

WHY RECOMMENDED:

- Three-tier busing ensures separate bus rides for RHS and RMS students
- Addresses parent concerns regarding elementary students going to school too early
- One of the most cost-effective options: 0-2 buses and 2 bus drivers needed
 - Est. cost \$120,000
 - Right-sizing current bus fleet
- Does not expand on busing costs for RHS athletics in the afternoon
- Does not negatively impact scheduling of RMS athletic competitions



Current Schedule
 RHS: 7:35 a.m.-2:27 p.m.
 RMS: 8:00 a.m.-3:00 p.m.
 ES: 9:00 a.m.-3:30 p.m.

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How the Final Recommendation Addresses Feedback Received and Research Conducted

- Homework being reviewed through the RTSD Wellness Study
- Includes retention of Community Period at current time in RHS bell schedule
- Includes retention of Homeroom at RHS
- Includes scheduling of "Fitness for Athletes" at the end of the RHS school day to mitigate lost instruction
- Three-tier busing ensures separate bus rides for RHS and RMS students
- Addresses parent concerns regarding elementary students going to school too early
- Maintains before-school sports practices at RHS while allowing for more sleep for participating student-athletes
- Contains metrics for evaluation
- Establishes more efficient bus routes
- Reduces time in RHS bell schedule without reducing instructional time
- Provides opportunity to have one-hour delays instead of two-hour delays for weather
- Includes establishment of healthy guidelines in use of technology



Comparing Bell Schedules

CURRENT BELL SCHEDULE

Level	Start Time	End Time	Length of Day
High	7:35 a.m.	2:27 p.m.	6 hours 52 mins
Middle	8:00 a.m.	3:00 p.m.	7 hours
Elementary	9:00 a.m.	3:30 p.m.	6 hours 30 mins

INITIAL RECOMMENDED BELL SCHEDULE (11/13/18)

Level	Start Time	End Time	Length of Day
High	8:30 a.m.	3:04 p.m.	6 hours 34 mins
Middle	8:00 a.m.	3:00 p.m.	7 hours
Elementary	9:15 a.m.	3:45 p.m.	6 hours 30 mins

Difference in TOTAL MINUTES from Current Bell Schedule

- High School: -18 mins
- Middle School: 0 mins
- Elementary: 0 mins

Difference in START TIME in Minutes from Current Bell Schedule

- High School: +55 mins
- Middle School: 0 mins
- Elementary: +15 mins

Difference in END TIME in Minutes from Current Bell Schedule

- High School: +37 mins
- Middle School: 0 mins
- Elementary: +15 mins

FINAL RECOMMENDED BELL SCHEDULE (3/26/19)

Level	Start Time	End Time	Length of Day
High	8:30 a.m.	3:10 p.m.	6 hours 40 mins
Middle	7:50 a.m.	2:40 p.m.	6 hours 50 mins
Elementary	9:07 a.m.	3:40 p.m.	6 hours 33 mins

Difference in TOTAL MINUTES from Current Bell Schedule

- High School: -12 mins
- Middle School: -10 mins
- Elementary: +3 mins

Difference in START TIME in Minutes from Current Bell Schedule

- High School: +55 mins
- Middle School: -10 mins
- Elementary: +7 mins

Difference in END TIME in Minutes from Current Bell Schedule

- High School: +43 mins
- Middle School: -20 mins
- Elementary: +10 mins



TRANSPORTATION INFORMATION

Earliest Pick-Up Time from Home Bus Stop (Morning)

Current Schedule

- RHS: 6:40 a.m.
- RMS: 7:09 a.m.
- ES: 8:12 a.m.

Under Final Recommendation

- RHS: 7:38 a.m.
- RMS: 7:04 a.m.
- ES: 8:15 a.m.

Approximate Bus Drop-Off Times at School (Morning)

Current Schedule

- RHS: 7:03-7:18 a.m.
- RMS: 7:35-7:55 a.m.
- ES: 8:45-8:55 a.m.

Under Final Recommendation

- RHS: 8:05-8:20 a.m.
- RMS: 7:25-7:40 a.m.
- ES: 8:50-9:00 a.m.

Approximate Latest Bus Pick-Up Times at School (Afternoon)

Current Schedule

- ES: 3:45 p.m.

Under Final Recommendation

- ES: 3:52 p.m.

Latest Drop-Off Times from School to Bus Stop (Afternoon)

Current Schedule

- ES: 4:23 p.m.

Under Final Recommendation

- ES: 4:30 p.m.

Current Average Bus Ride

RHS AM = 26 minutes

RHS PM = 24 minutes

RMS AM = 36 minutes

RMS PM = 26 minutes

IES AM = 30 minutes

IES PM = 28 minutes

RES AM = 28 minutes

RES PM = 29 minutes

WES AM = 22 minutes

WES PM = 25 minutes

Average Bus Rides Under Final Recommendation

RHS AM = 28 minutes

RHS PM = 24 minutes

RMS AM = 25 minutes

RMS PM = 27 minutes

IES AM = 28 minutes

IES PM = 30 minutes

RES AM = 28 minutes

RES PM = 29 minutes

WES AM = 22 minutes

WES PM = 25 minutes ¹⁵

METRICS FOR EVALUATION

Student Survey Data (May of Each Year)

Parent Survey Data (May of Each Year)

RHS Student and Parent Focus Groups
(Several Meetings Throughout School Year)

Ongoing Collection of Feedback
(sleep@rtsd.org)

Nurse Visits

Attendance Data (Absences and Tardiness)

Social Worker/School Psychologist
Referrals

Athletic Injuries, Including Concussions

School Climate Survey (Annually)

Review of Historical PA Youth Survey Data
(Every two years)

Review of Historical Early Dismissal Data



Possible Period-By-Period Bell Schedules Under Final Recommendation

RADNOR HIGH SCHOOL

8 Period Days (Mondays, Tuesdays, Fridays)

	<u>Begin</u>	<u>End</u>			
Homeroom	8:30 AM	8:36 AM			
Period 1	8:40 AM	9:21 AM			
Period 2	9:25 AM	10:06 AM			
Period 3	10:10 AM	10:51 AM			
A	10:55 AM	11:25 AM			
Period 4	11:29 AM	11:36 AM			
B	11:40 AM	12:10 PM			
Period 5	12:14 PM	12:21 PM			
C	12:25 PM	12:55 PM			
Period 6	12:59 PM	1:40 PM			
Period 7	1:44 PM	2:25 PM			
Period 8	2:29 PM	3:10 PM			

On 8 period days, lunch is assigned and appears on student schedules.

A Lunch	Period A4	Period A4
Period 4B	B Lunch	Period B5
Period 5C	Period 5C	C Lunch

4 Block Days (Wednesdays, Thursdays)

	<u>Begin</u>	<u>End</u>	
Homeroom	8:30 AM	8:36 AM	
Block 1 or 2	8:40 AM	10:00 AM	
Community Pd.	10:04 AM	10:24 AM	
A	10:28 AM	10:58 AM	Lunch
Block 3 or 4	11:02 AM	11:07 AM	Block 3 or 4
B	11:10 PM	11:40 PM	
Block 3 or 4	11:43 PM	11:48 PM	
C	11:52 PM	12:22 PM	
Block 5 or 6	12:26 PM	1:46 PM	
Block 7 or 8	1:50 PM	3:10 PM	

BOLD times indicate when bells will ring

RMS Bell Schedule 2018-2019

	6 th Grade	7 th Grade	8 th Grade
Advisory	8:00-8:35	8:00-8:35	8:00-8:35
Period 1	8:38-9:25 ENCORE	8:38-9:25	8:38-9:25
Period 2	9:28-10:15	9:28-10:15 ENCORE	9:28-10:15
Period 3	10:18-11:05	10:18-11:05 ENCORE	10:18-11:05
Period 4	11:08-11:55 ENCORE	11:08-11:55	11:07-11:37 LUNCH
Period 5	11:57-12:27 LUNCH	11:58-12:45	11:39-12:26
Period 6	12:29-1:16	12:47-1:17 LUNCH	12:29-1:16 ENCORE
Period 7	1:19-2:06	1:19-2:06	1:19-2:06 ENCORE
Period 8 *Extended Learning Time (ELT) and SOS	2:09-3:00 Days 1&5 Pd. 2	2:09-3:00 Days 2&6 Pd. 3	2:09-3:00 Days 3&7 Pd. 6
	2:09-3:00 Days 4&8 Pd. 7	2:09-3:00 Days 1&5 Pd. 1	2:09-3:00 Days 2&6 Pd. 4
	2:09-3:00 Days 3&7 Pd. 5	2:09-3:00 Days 4&8 Pd. 7	2:09-3:00 Days 1&5 Pd. 1
	2:09-3:00 Days 2&6 Pd. 3	2:09-3:00 Days 3&7 Pd. 2	2:09-3:00 Days 4&8 Pd. 5

*Extended Learning Time – Students should report to the class period listed based on the daily cycle day.

**Core and Encore classes are 47 minutes

RMS administration has convened a committee that has begun the process of developing a new RMS schedule that would be implemented should the Final Recommendation be approved. This proposed schedule is scheduled to be presented at the April 23, 2019 School Board Business Meeting.



Why Change?

Delayed school start times are associated with positive outcomes.

- Increased sleep duration
- Fewer motor vehicle crashes
- Improved attendance
- Less tardiness
- Reduced daytime sleepiness
- Less falling asleep in class
- Fewer depressive symptoms
- Some evidence of increase in GPAs, SATs
- No adverse impact on academics
- Decreased health center visits

Final Recommendation: Other Considerations

Homework

Homework will be reviewed in the district through the Wellness Study.

Bus Transportation

Two additional buses and two additional drivers may be required at an estimated \$120,000 as well as the right-sizing of the current fleet. Should additional buses be needed, two spare buses could be parked in the lot RTSD owns near RES.

The RTSD Transportation Department has worked to travel the proposed routes during the times outlined in the final recommendation. This provided the department important data that helped to confirm route lengths during the times of day buses are proposed to run. When investigating ways to make the bus runs more efficient, a determination was made that many secondary students do not walk to bus stops. To streamline bus routes, the district plans to increase neighborhood stops for secondary students.

Earliest Pick-Up Times from Home Bus Stop (Morning)

Current Schedule

- RHS: 6:40 a.m.; RMS: 7:04 a.m.; Elementary: 8:12 a.m.

Under Final Recommendation

- RHS: 7:38 a.m.; RMS: 7:04 a.m.; Elementary: 8:15 a.m.

Approximate Bus Drop-Off Times at Schools (Morning)

Current Schedule

- RHS: 7:03-7:18 a.m.; RMS: 7:35-7:55 a.m.; Elementary: 8:45-8:55 a.m.

Under Final Recommendation

- RHS: 8:05-8:20 a.m.; RMS: 7:25-7:40 a.m.; Elementary: 8:50-9 a.m.

Latest Elementary Drop-Off Time at Bus Stop (Afternoon)

Current Schedule

- 4:23 p.m.

Under Final Recommendation

- 4:30 p.m.

Approximate Latest Bus Pick-Up Times at Elementary Schools (Afternoon)

Current Schedule

- 3:45 p.m.

Under Final Recommendation

- 3:52 p.m.



CURRENT AVERAGE BUS RIDE	AVERAGE BUS RIDE UNDER FINAL RECOMMENDATION
Radnor High School	
RHS A.M.: 26 Minutes	RHS A.M.: 28 Minutes
RHS P.M.: 24 Minutes	RHS P.M.: 24 Minutes
Radnor Middle School	
RMS A.M.: 36 Minutes	RMS A.M.: 25 Minutes
RMS P.M.: 26 Minutes	RMS P.M.: 27 Minutes
Ithan Elementary School	
IES A.M.: 30 Minutes	IES A.M.: 28 Minutes
IES P.M.: 28 Minutes	IES P.M.: 30 Minutes
Radnor Elementary School	
RES A.M.: 28 Minutes	RES A.M.: 28 Minutes
RES P.M.: 29 Minutes	RES P.M.: 29 Minutes
Wayne Elementary School	
WES A.M.: 22 Minutes	WES A.M.: 22 Minutes
WES P.M.: 25 Minutes	WES P.M.: 25 Minutes



Homeroom at Radnor High School

All students will continue to be assigned to a homeroom to ensure they have a place to go at the beginning of the school day; during “Homeroom Day” community periods; and other times as needed. During the feedback sessions, some students, parents and several RHS faculty members expressed the opinion that homeroom was an important part of the culture at RHS. In addition to providing time for distribution of passes, watching morning announcements, and taking attendance, homeroom provides a needed check-in for students and allows them a positive start to the school day. While all students benefit from homeroom, this time is especially critical for freshmen.

Community Period at Radnor High School

Based on feedback from students and teaching staff, Community Period will remain at its current time at RHS, between 1st and 3rd periods on Wednesdays and between 2nd and 4th periods on Thursdays. This reduces potential conflicts between athletics and club meetings. Moving Community Period to the end of the day as proposed in Initial Recommendation provided a buffer for students who had athletic games. The use of “Fitness for Athletes” (see below) during 8th period will help address the concern regarding loss of instructional time.

“Fitness for Athletes”

“Fitness for Athletes” is a Physical Education (PE) choice for upperclass RHS students that helps alleviate the conflict with after-school sports practices and competitions. While there is no way to guarantee that every RHS student will be enrolled in a given class during a specific period of the day, a concerted effort will be made at the outset of the scheduling process to prioritize Fitness for Athletes into the schedules of upperclass athletes whose sport requires early dismissal.

Athletes in selected sports would be scheduled into Fitness for Athletes during 8th period. RHS administration and the Athletic Department spent considerable time examining the sports that would require regular early dismissals. Sports such as golf (at the behest of country clubs for tee times), RHS crew teams (which practice off site and must contend with daylight), and the ice hockey teams (constrained by available ice time) will have priority. Other sports identified due to constraints associated with RHS facilities or those of other Central Athletic League schools, such as baseball, that play on fields without lights, will also be scheduled into Fitness for Athletes. Some sports, such as girls and boys varsity basketball, varsity football, and varsity wrestling, do not need to be scheduled into Fitness for Athletes because their games and competitions are played in the evenings.

Students in identified sports would be permitted to leave when they have practice or games during their established season that conflict with Fitness for Athletes. Scheduling athletes in Fitness for Athletes the last period of the day will allow students to be dismissed up to 45 minutes prior to the end of the school day. The goal is to be flexible and mitigate lost instructional time, however RHS is not looking to extend sports seasons beyond their historical and established start and end times, or let students out of class when no conflict exists. When conflicts occur during the established season, athletes will be excused from Fitness for Athletes and will not have to make up the class. RHS administration and the Athletic Department will assist in facilitating communication between the PE Department and athletic coaches on days that students are to be dismissed. When a sport is out of season, and when conflicts do not occur during the season, students are expected to attend PE.



Instructional Time and Radnor Middle School

Secondary schools in Pennsylvania are required to have 990 hours of instructional time each year. As part of the exploration of a possible change in start times, the length of the RMS school day was examined. Currently, students attending RMS are slated to receive 1059.8 hours of instruction each year -- 69.8 hours over the 990 required by the Pennsylvania Department of Education. For some schedule options considered, reducing the instructional day up to 10 minutes was an option to provide flexibility with busing. By reducing the RMS bell schedule by 10 minutes daily, the annual instructional time would be reduced by 30 hours, giving RMS students 1029.8 hours of instructional time per school year. The instructional day for faculty members would remain as is, allowing for added time for planning, parent communication, grading, and other important professional responsibilities.

Duty Day for Employees at the Elementary Schools

The duty day for teachers at the elementary schools would not change. Under the proposed schedule, the elementary student day would start at 9:07 a.m. and end at 3:40 p.m. Staff would adjust their start times accordingly.

Duty Day for Employees at Radnor Middle School

Under the initial recommendation, consideration was given to staggering professional staff start and end times to ensure adequate supervision of students due to the previously proposed two-tier transportation model. This staggered start time model is not needed under the current proposal. The duty day for RMS employees will be adjusted based on the student start times.

Duty Day for Employees at Radnor High School

With the later start of the school day, the duty day for an RHS teacher would be changed with minimal disruption. Currently, teachers at RHS work from 7:15 a.m.

to 2:45 p.m. or from 7:30 a.m. to 3 p.m. Under the proposed schedule, teachers would work from 7:40 a.m. to 3:10 p.m. or from 7:55 to 3:25 p.m. Para-professionals would have their hours adjusted to work when students are in the building. Secretarial hours would be examined on a case-by-case basis to ensure appropriate coverage before, after, and during the school day.

Before School Sports at Radnor High School

Currently, the RHS swimming and diving teams practice before school during the swim season. Practices are optional and typically begin at 5:15 a.m. or 5:30 a.m., although occasionally diving practices begin at 6 a.m.. RHS teams take turns with the use of the pool, and morning practices typically run 75 to 120 minutes. In the months of January and February, there were 40 school days, and 12 practices during the week before the start of the school day. The RHS Athletic Director met with the coaches of the swimming and diving teams to discuss options that would allow athletes to remain competitive, and at the same time ensure they are getting the medically recommended sleep. Through these discussions, the committee recommends allowing the morning practices to continue with the understanding that the start of practices would be pushed back to account for the delayed start at RHS. Practices would continue to be 75 to 120 minutes in length.

Updated Instructional Time Calculation for Radnor High School

Proposed 8 Period Day

- Homeroom (6 mins) + Periods 1-8 (41 mins x 8 = 328) = 334 mins

Proposed 4 Block Day

- Homeroom (6 mins) + Comm Period (20 mins) + Blocks 1-4 (80 mins x 4) = 346 mins

Total Minutes

- 334 mins x 3 days a week = 1,002 minutes
- 346 mins x 2 days a week = 692 minutes
- 1,002 mins + 692 mins = 1,694 mins ÷ 5 days a week = 338.8 average mins per day
- 338.8 mins per day average x 180 school days = 60,984 mins
- 60,984 mins ÷ 60 mins in an hour = 1,016.4 hours per year (990 hours required)



Elementary Before- and After-School Care Services

As part of the study, the district was in consultation with the 2018-19 provider of before- and after-school care for RTSD elementary families, Family Support Services (FSS). During the study, the district conducted further exploration into before- and after-school care providers and, as a result, located and entered into a partnership with “Right At School” that will begin the 2019-20 school year.

The program provided by Right At School will take place in a student’s home elementary school directly before and after the school day. The program provides a curriculum focusing on student enrichment through activities led by highly trained educators. Details on Right At School can be found at www.RTSD.org.

Custodial Services Work Day

During the feedback sessions, custodial staff members raised the concern that due to their use of public transportation, if their work day at RHS ended later they would be unable to utilize public transportation after work. After review of custodial job functions, it was determined that no change would be necessary.

RMS Students Who Take Math at RHS in the Morning

Over the past 10 years, a small sub-section of students from RMS have taken Mathematics classes at RHS in the morning. This practice does not happen every year. In some years, these RMS students have taken math at RMS. Due to the fact that the RHS school day has historically started prior to the RMS school day and the RMS Advisory period in the morning provided a buffer, the years when RMS students took Math at RHS caused them to miss minimal class time. Under the final recommendation, RMS students would take Math at RMS.

Much More Than Starting Later

While much attention has been rightfully given to the calls from major medical organizations for later school start times, these groups also offered other strong recommendations for helping students get more sleep. Regardless of whether Radnor Township School District changes school start times, the following actions will be taken or examined as a means to improve student sleep health.

Educating Parents and Students

- Healthy Technology Use
- Time Management & Finding Balance
- Sleep Environment Tips

School- and District-Based

- Review of Homework
- Sleep Hygiene education
- Consider limit on daily school activity/practice time
- Consider prohibition of school-sponsored activities in school buildings after certain evening hours



Feedback from the Experts

FROM DR. JUDITH OWENS:

*“Your Committee's **extremely thoughtful and inclusive decision-making process** that examined a wide range of options for school start times, as well as the most appropriate timeline of events, were **exemplary**. Your detailed explanations of the pros and cons of the various approaches in the report clearly delineated your thought processes, and the final recommendation represents a **true best-case scenario** given the complexity of the issues and the various factions/agendas involved. **This should serve as a model for other school districts across the country.**”*

FROM DR. WENDY TROXEL:

*“Congratulations on your **thoughtful and systematic process** over the past several years to engage the Radnor community, present the science concerning adolescent sleep and the conflict with early school start times, and **effectively problem-solve to arrive at the solution that works for most students.**”*

UPDATED TIMELINE

IN THIS SECTION

1. UPDATED STUDY TIME: AUGUST 2015-APRIL 2019

This report is subject to change at any time. This section of this report is current as of April 5, 2019.

Representatives from Radnor Township School District have been informally and formally involved in discussions and meetings focused on the subjects of sleep and school start time since at least 2015. Activities conducted by the district include:

- Discussion during at least nine School Board and Committee meetings since May 2016
- At least 15 meetings of the RTSD Sleep and School Start Time Committee since Nov. 2017
- Three separate surveys for community members, RHS students, and private and parochial schools
- Five separate community and student/staff presentations featuring national sleep expert Dr. Judith Owens in Feb. 2016 and 2019 and national sleep expert Dr. Wendy Troxel in March 2018
- At least 14 separate feedback/information sessions for staff, parents and community members since Nov. 2018
- The creation of a dedicated webpage (www.RTSD.org/sleep) and an email address for ongoing community feedback (sleep@rtsd.org) in Sept. 2015
- Outreach to potentially impacted community partners and groups, including Central League representatives, before- and after-school care providers, and the Delaware County Intermediate Unit
- Conversation and collaboration with school districts that have changed school start times and districts that are also investigating a possible school start time change
- Retention of third-party bus-routing company to assist in determining greatest efficiency of bus runs

A complete timeline of activities related to the study of sleep and school start time in RTSD can be found on the following pages.



2014-2016

2017

2018

August 2014 The American Academy of Pediatrics publishes research finding sufficient sleep integral to adolescent health	Oct. 2015-Present Representatives from the Leagues of Women Voters, RTSD, and parent groups from Lower Merion, Tredyffrin-Easttown, Radnor, and West Chester form the Regional Adolescent Sleep Needs Committee (RASNC) . RASNC has met every month during the school year since formed. Current members represent 14 school districts	Feb. 21 & 22, 2016 Nationally renowned pediatric sleep expert Dr. Judith Owens visits RTSD to speak to staff, students, parents and community members	June 2016 The initial district-supported Adolescent Sleep Needs Task Force holds its first meeting	June 27, 2017 Superintendent Kenneth E. Batchelor, who joined RTSD in February 2017, names exploration of student sleep needs and school start time an RTSD 2017-18 Priority Project	Sept. 19, 2017 School Board Curriculum Committee meeting: Announcement made that RTSD Adolescent Sleep and School Start Time Committee will be created	Oct. 26-Nov. 8, 2017 Survey open for Radnor community on adolescent sleep and school start time; survey includes application to apply to be member of the to-be-formed Adolescent Sleep and School Start Time Committee	Dec. 14, 2017 Meeting of the Adolescent Sleep and School Start Time Committee: Members separate into subcommittees focused on areas of study such as Academics and Transportation	and School Start Time Committee: Review of RTSD mission statement and purpose of committee; discussion about research and possible impacts on community; identification of questions for FAQ and pros and cons of a later school start time; discussion of other strategies that address student sleep	Feb. 22, 2018 Meeting of Adolescent Sleep and School Start Time Committee: Final review of Teen Sleep Habits Survey; review of FAQs; break-out groups discuss scenarios: no later start time/plan to address student sleep needs and later school start time/associated logistics	March 14-28, 2018 Teen Sleep Habits Survey given to RHS students in English classes
August 2015 Former RTSD Superintendent Dr. Michael Kelly announces at the School Board Business Meeting that the district will be taking a look at the issue of adolescent sleep needs and school start time	Dec. 2015 With support from local school districts such as RTSD and T/E, RASNC finalizes planning for a public event featuring Dr. Judith Owens , a nationally renowned pediatric sleep expert	May 24, 2016 At School Board meeting, RTSD affirms commitment to support efforts to ensure students get sufficient sleep		Aug. 15, 2017 RTSD Curriculum Committee names "Adolescent Sleep" a planned agenda item for certain 2017-18 Curriculum Committee Meetings	Sept. 26, 2017 At a planning meeting, district staff reiterate the district's ongoing commitment to the topic of student sleep and school start time and share a timeline and action plan for the study. Previous members involved in the initial Adolescent Sleep Needs Task Force are encouraged to apply to become a member of the new committee	Nov. 29, 2017 First meeting of the Adolescent Sleep and School Start Time Committee: Introduction of members; review of the RTSD mission statement; discussion about committee's purpose; and initial work to establish study areas		Jan. 25, 2018 Meeting of the Adolescent Sleep and School Start Time Committee: Members of RASNC discuss the organization's background and guiding principles and conduct Q&A. Committee members review questions for a Teen Sleep Habits survey for RHS students, develop FAQs, and receive an update on the creation of dedicated website and email address	March 12 & 14, 2018 Pediatric sleep expert Dr. Wendy Troxel visits RTSD to present to area parents and community members (March 12) and RHS students in grades 9-12 (March 14)	



2018

April 26, 2018 Meeting of Sleep and School Start Time Committee: Overview of progress to date; review of Teen Health Habits Survey data; determination to evaluate at least four options ranging from no change in school start time to a 90-minute adjustment	May 7, 2018 Meeting of Adolescent Sleep and School Start Time Committee: Evaluation of different start time scenarios; discussion of items impacted by a change in start time, including transportation, schedules, sports, community youth sports, and clubs/activities	May 21, 2018 Meeting of Adolescent Sleep and School Start Time Committee: Decision made to ask RHS and RTSD administrators to follow up to evaluate the scenarios to determine impact on RTSD as well as community as a whole	August 28, 2018 School Board Business Meeting: Presentation on progress and next steps for the Adolescent Sleep and School Start Time Committee as part of larger presentation on the 2017-18 RTSD Goals and Priority Projects	Week of Sept. 10, 2018 Discussions with RTSD school administrators regarding impact of possible time change on all District schools	Oct. 8, 2018 Draft of Adolescent Sleep and School Start Time Committee Report and Initial Recommendation made available to members of Adolescent Sleep and School Start Time Committee for review prior to Oct. 10 meeting.	Nov. 1, 2018 Meetings with RTSD staff members to review and discuss Adolescent Sleep and School Start Time Committee Report and Initial Recommendation	Nov. 8, 2018 Meetings with RHS students to discuss Adolescent Sleep and School Start Time Committee Report and Initial Recommendation	Nov. 13, 2018 Curriculum Committee Meeting of the Whole School Board: Adolescent Sleep and School Start Time Committee Report and Initial Recommendation presented	Nov. 28, 2018 • Meeting of the Sleep and School Start Time Committee • Feedback session with Radnor High School students	Dec. 4, 2018 Feedback session with Radnor High School staff	Dec. 7, 2018 • Feedback session with Ithan Elementary School staff • Feedback session with Radnor Middle School staff
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April 12, 2018 Meeting of the Adolescent Sleep and School Start Time Committee: Update from RASNC regarding a webinar with Dr. Ali Haghani, an expert in the field of transportation, in which committee members participated; overview of Teen Sleep Habits Survey, which was completed by 848 RHS students; further discussion on start time scenarios	May 8, 2018 Curriculum Committee Meeting of the Whole School Board: Presentation on the progress of the Adolescent Sleep and School Start Time Committee, including purpose of committee; committee members; objectives of the study; summary of results of the Teen Sleep Habits Survey; and next steps	Week of August 27, 2018 Meetings held with RTSD Transportation Department to evaluate all start time scenarios	Sept. 7, 2018 Timeline developed for release of final Adolescent Sleep and School Start Time Committee proposal on whether a later school start time in RTSD is feasible and recommended. Initial Recommendation is subject to a vote by the School Board prior to any action (scheduled for Spring 2019)	Sept. 11, 2018 Curriculum Committee Meeting of the Whole School Board: Adolescent Sleep and School Start Time listed as a "Priority Project" on proposed district Goals and Priority Projects for 2018-19	Oct. 10, 2018 Meeting of Adolescent Sleep and School Start Time Committee: Review of draft Adolescent Sleep and School Start Time Committee Report and Initial Recommendation	Nov. and Dec. 2018 Feedback sessions on Adolescent Sleep and School Start Time Report with staff at each school building and Radnor High School students	Nov. 9, 2018 Adolescent Sleep and School Start Time Report and Initial Recommendation made available to School Board and public	Nov. 27, 2018 Feedback session with Radnor Elementary School staff	Dec. 3, 2018 Evening meeting open to public to discuss Adolescent Sleep and School Start Time Report and Initial Recommendation and receive feedback	Dec. 5, 2018 Feedback session with Wayne Elementary School staff	Dec. 12, 2018 Meeting of the Sleep and School Start Time Committee
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2019

Jan. 7, 2019
Evening meeting open to public to discuss Adolescent Sleep and School Start Time Report and Initial Recommendation and receive feedback

Feb. 7, 2019
"The Science Behind Sleep" with nationally renowned sleep expert Dr. Judith Owens

March 11, 2019
Meeting of the Sleep and School Start Time Committee: The committee further narrowed the Final Recommendations

March 21, 2019
Meetings with RMS staff members to review and discuss Sleep and School Start Time Committee Final Recommendation

April 2, 2019
Community Feedback Meeting at WES

April 4, 2019
Community Feedback Meeting at RMS

April 9, 2019
Community Feedback Meeting at RMS

Jan. 23, 2019
Meeting of the Sleep and School Start Time Committee:

Feb. 28, 2019
Meeting of the Sleep and School Start Time Committee: The committee debriefed on the Dr. Owens' event and discussed updated study information to begin narrowing down final school start time recommendations

March 20, 2019
Meetings with RHS and ES staff members to review and discuss Sleep and School Start Time Committee Final Recommendation

March 26, 2019
Presentation of Final Recommendation to School Board and discussion

April 3, 2019
Community Feedback Meetings at IES and RES

April 8, 2019
Community Feedback Meeting at RMS

April 23, 2019
Earliest planned School Board vote

