

School Start Times

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I. Introduction and History

Everyone wants the best for students. Education is predicated on the belief that what happens in schools and in classrooms is designed to help students do their best and be their best. We are still shackled to an agrarian calendar that has students attending school for approximately 172 days crammed in between Labor Day and as close to Memorial Day as you can get without going too far into June. We are also shackled by norms and customs that dictate when formalized schooling begins for students. In most instances secondary students, who seem more like adults and have therefore would have more of a predilection to awaking early, start school earlier and the elementary students would therefore start school later.

This practice has served us well for many years. However, science and research in the last several years have shown that our practice was not always in the best interest of students. Mahtomedi was one of a few school districts that examined and changed school start and end times and has been cited as such. At one time, Mahtomedi had three separate bus runs and had the high school students begin classes at 7:30 am and end at 2:00 pm. Using research and having an economic imperative, Mahtomedi changed the secondary school start times and went from three bus runs to two runs. In addition to saving money, the high school and middle school student day now went from 8:00 am to 2:30 moving the student day back thirty minutes.

II. Sleep Study and Research

Mahtomedi's change in start time was seen as a positive step by the Center for Applied Research and Educational Improvement (CAREI) and cited as such in understanding and working with the nature sleep cycles of adolescents. However, more recent research indicates that starting school for secondary students at 8:00 am may not be enough. TIME Health, April 17, 2017 says, "Middle and high school should start not earlier than 8:30 am." It also quotes the American Academy of Sleep Medicine saying that "starting school earlier in the morning prevents children and teenagers from getting a full night's sleep which can affect their health, safety, and academic performance."

The web version of the District Administrator magazine on July 31, 2017 cites The Sacramento Bee and notes that there is legislative interest in school start times. They quote, "Sen. Anthony Portantino's Senate Bill 328, which would prohibit middle schools and high schools from starting earlier than 8:30 a.m., is cruising through the Legislature and faces final votes when lawmakers return next month." Clearly, student sleep and school start times are of interest nationally and locally.

Kyla Wahlstrom of the University of Minnesota, in a publication entitled "The Conversation, KSDK" cites research that states, "Medical researchers also found that sleep patterns of younger children enabled them to rise early and be ready for learning much earlier than adolescents." In the same article she cites "In the secretions of the sleep hormone melatonin begins at about 10:45 pm and continues until about 8:00 am. What this means is that teenagers are unable to fall asleep until melatonin secretion begins and they are also not able to awaken until the melatonin secretion stops."

It is difficult to change things that are very entrenched. There is research from the Minnesota Sleep Society (mnsleep.net) that refutes some commonly held assumptions about school start times and adolescent sleep patterns. They address several questions and concerns about changing start and end times. They provide evidence that, "contrary to fears and expectations, there is evidence that students will obtain more sleep when school start is shifted later" in answering the assertion that with a later school start time students will just stay up later. In addition they refute the assertion that teens would get more sleep if parents just made them go to bed earlier and take away TV and internet access. MNSleep.org states, "Science reveals teenagers have a biological shift in their sleep cycle that is due to developmental changes which actually signal the brain to feel sleepy later. Thus, teens can have a difficult time falling asleep before about 10:45 pm and the brain remains in the sleep mode until about 8:00am."

Conrad Iber, M.D. and Kyla Wahlstrom, PhD have answered questions about adolescents having insufficient sleep. They state:

- Less sleep is associated with poorer test scores and reduced academic performance.

- Insufficient sleep (less than eight hour per night for teens) is associated with depressed moods, increased emotional outbursts, and increased risky behavior.
- A teenager getting less than eight hours of sleep per night is significantly more likely to use cigarettes, alcohol, drugs, and be sexually active.
- If an athlete performs with insufficient sleep, he or she is more likely to lose the game.

III. Other School Districts Actions

School start times has been investigated by other area school districts. In almost every instance there was concern and opposition to change. Recently, these school districts have made school start time changes:

- Wayzata
- Buffalo-Hanover-Montrose
- Moundsview for 2018-19 (times included below)
- Mendota Heights West Tonka (Sibley High School)
- Stillwater is examining a potential change
- St. Paul

While it is helpful to see what other school districts are doing, there isn't an exact comparison to Mahtomedi. Therefore, I believe we have to act in what we believe are the best interests of our students and community.

IV. Local Elementary and Secondary School Start and End Times

The information below was gathered by Dr. Mike Neubeck and has the starting, ending, and length of the school day. There are 11 districts in which there are elementary schools and 13 in which there are secondary schools. The reason there are more districts with secondary schools is because two of the athletic conference schools--Hill-Murray and St. Thomas Academy only have secondary schools. The school districts are from our same athletic conference and some neighboring school districts.

School District		Start Time	End Time	Length of School Day
Mahtomedi	High School	8:00	2:30	6.5 hours
	Middle School	8:00	2:30	6.5 hours
	OH Anderson	9:05	3:25	6 hours and 20 mins
	Wildwood	9:15	3:35	6 hours and 20 mins

North St. Paul	High School	8:15	2:45	6.5 hours
	Middle Schools	7:45	2:15	6.5 hours
	Elementary school	8:45	3:15	6.5 hours
	Elementary school	9:15	3:45	6.5 hours
South St. Paul	High School	7:00	7:45	Zero Hour
		7:50	2:30	6 hours and 40 mins
	CLC (High School)	7:45	2:20	6 hours and 35 mins
	Middle School	7:50	2:30	6 hours and 40 mins
	Lincoln Elementary	8:20	2:55	6 hours and 35 mins
	Kaposia Elementary	9:00	3:35	6 hours and 35 mins
Henry Sibley	High School	8:30	3:04	6 hours and 34 mins
	Middle Schools	8:45	3:20	6 hours and 35 mins
	Elementary Schools	7:45	2:15	6 hours and 30 mins
Simley	High School	7:40	2:30	6 hours and 50 mins
	Middle School	7:40	2:30	6 hours and 50 mins
	Elementary Schools	8:30	3:10	6 hours and 40 mins
Hastings	High School	7:50	2:30	6 hours and 40 mins
	Middle School	7:55	2:35	6 hours and 40 mins
	Elementary Schools	8:50	3:35	6 hours and 45 mins
St. Thomas Academy	High School	8:00	3:00	7 hours
	Middle School	8:00	3:00	7 hours
Hill- Murray	High School	6:55	7:35	Zero Hour
		7:40	2:10	6.5 hours
	Middle School	7:40	2:10	6.5 hours
White Bear Lake	North Campus (9/10)	7:30	2:15	6 hours and 45 mins
	South Campus (11/12)	7:55	2:35	6 hours and 40 mins

	Middle Schools	8:15	3:00	6 hours and 45 mins
	Elementary	9:15	3:40	6 hours and 25 mins
	One Elementary	8:55	3:35	6 hours and 40 mins
Stillwater	High School	7:40	2:10	6.5 hours
	Middle School	7:50	2:20	6.5 hours
	Elementary	8:40	3:10	6.5 hours
		8:45	3:15	6.5 hours
Forest Lake	High School	8:00	2:30	6.5 hours
	ALC	7:55	2:15	6 hours and 20 mins
	Junior High	7:43	2:13	6.5 hours
	Elementary	9:15	3:40	6 hours and 25 mins
Mounds View	High Schools and ALC	8:35	3:15	6 hours and 40 mins
Starting 2018-19	Middle Schools	7:45	2:25	6 hours and 40 mins
	2 Elementaries	8:35	3:15	6 hours and 40 mins
	4 Elementaries	9:20	4:00	6 hours and 40 mins
	4 Kindergarten	9:05	3:45	6 hours and 40 mins
	3 kindergarten	8:20	3:00	6 hours and 40 mins
Roseville	High School	8:10	2:40	6.5 hours
	Middle School	8:05	2:40	6 hours and 35 mins
	ALC	8:50	3:20	6.5 hours
	4 Elementaries	9:35	4:00	6 hours and 25 mins
	3 Elementaries	8:55	3:20	6 hours and 25 mins
	Parkview Elementary	7:35	2:00	6 hours and 25 mins

To summarize the data, five of the 11 elementary school districts has schools that start as late or later than Mahtomedi and ten of the eleven has schools that start earlier. Of the school districts selected, Mahtomedi's elementary school day of 6 hours and 20 minutes is the shortest and Hastings has the longest elementary school day of 6 hours 45 minutes.

For secondary schools there are four high schools that start later than Mahtomedi High School, six that start earlier and two that start at the same time--8:00 am. For the middle school there are eight that start earlier than Mahtomedi Middle School, three that start later and one that starts at 8:00 am.

In terms of the length of the school day, there are seven of the thirteen districts that have a longer school day and five that have the same length of time as the high school. None have a shorter school day. Likewise, for the middle school, there are eight districts that have a longer school day and four that have the same day while none have a shorter school day.

V. Legal Requirements for School Days

120A.41 LENGTH OF SCHOOL YEAR; HOURS OF INSTRUCTION.
A school board's annual school calendar must include at least 425 hours of instruction for a kindergarten student without a disability, 935 hours of instruction for a student in grades 1 through 6, and 1,020 hours of instruction for a student in grades 7 through 12, not including summer school. The school calendar for all-day kindergarten must include at least 850 hours of instruction for the school year.
Mahtomedi Kindergarten has 1005 hours which is 155 hours over the minimum
Mahtomedi Grade 1-5 have 1023 hours which is 88 hours over the minimum
Mahtomedi Grade 6 has 1032 hours which is 97 hours over the minimum
Mahtomedi grade 7-12 have 1032 hours which is 12 hours over the minimum

If the secondary schools add ten minutes to their school day they would be at 1060 hours which is 40 hours over the minimum and would create possibility for dedicated professional development time by utilizing 2 hour late starts or early dismissals.

In addition, a slightly later end time at the secondary schools would provide more of a buffer for transportation. According to busing experts, having more time between dismissals of the first tier and the second tier is advantageous compared to having that time in the morning.

VI. Busing Options/Scenarios

The information below comes from Mr. Arlen Hviding who routes the buses for Mahtomedi and works for CESO (The Center for Efficient School Operations).

If cost were no object most school districts would hire enough buses and drivers to have district wide uniform starting and ending times. With the exception of very small, geographically or student enrollment, districts have two or three tiers of busing transportation. Mahtomedi had

three tiers, but moved to two tiers along with moving back the secondary school start times sometime in the 2000s.

Currently, the bus contract is approximately \$1,004,000. The contract calls for 18 buses with each doing a tier 1 bus run and then a tier 2 bus run. An estimation of busing expenses going from two tiers with 18 buses to one tier would be a sizeable increase. According to Mr. Hviding, a single tier would require 38 buses with an average of 68 students per bus. Assuming a negotiated 15% daily bus cost reduction, the projected annual costs would be approximately \$1,800,000. In addition, I believe it would be more difficult to find drivers as evidenced by the fact that in 2016-17 we were trying to find 18 drivers to do the two tiers and had difficulty filling those positions.

If the district would have two separate service providers, one for the elementary and one for the secondary, there would not a financial or service level benefit and from a transportation perspective, a single service provider operating a two tier route is preferable because there is only one vehicle, one driver, one set of overhead costs. But two service providers could be done and it would likely require 36 vehicles operating single tier routes. Again, assuming negotiated 15% daily bus cost reduction, the projected annual costs would be approximately \$1,700,000.

Neither students nor families want excessively long bus rides. Currently, the length of bus ride times are:

Secondary	Route length	# of AM Buses	# of PM buses
	> 60 minutes	0	0
	50-60 minutes	1	0
	40-50 minutes	5	5
	30-40 minutes	8	11
	< 30 minutes	4	2

The length of the route for secondary students is clearly less than in the afternoon than in the morning. The speculation behind that is that there are after school activities that keep secondary students after school and therefore they don't take the bus and there are more student drivers.

Elementary	Route length	# of AM Buses	# of PM buses
	> 60 minutes	2	4

	50-60 minutes	9	7
	40-50 minutes	3	5
	30-40 minutes	4	2
	< 30 minutes	0	0

It appears that the elementary schools have more students riding longer in the afternoon than in the morning and there isn't a good explanation as to why that is.

The current system has two tiers--K-5 and 6-12. In 2016-17 CESO routed buses to an average capacity of 64 students for K-5 and 77 students for 6-12. They routed 2539 students for daily transportation to and from school.

Current two tier system is:

School	Drop	Start time	End time	Leave	Buses
Secondary	7:45	8:00	2:30	2:37	18
OHA	8:55	9:05	3:25	3:35	18
Wildwood	9:02	9:15	3:35	3:45	18

Based on the length of bus ride data, in the current scenario, only one bus for secondary has a 50-60 minute morning ride. Therefore, the earliest time a secondary student would be picked up in the morning would 6:45 am. For elementary students, there are two buses that have a morning route length of more than 60 minutes. Those students are picked up somewhere around 7:50 am.

Secondary school students will get off the bus, at the latest 40-50 after the bus leaves indicating that the student would be dropped off is no later than 3:37 pm. Elementary students have four buses that drive for more than 60 minutes meaning that the latest they would be dropped off is 4:50 pm.

If school start times were to “flip” with the elementary starting earlier and the secondary starting later that scenario would look like:

School	Drop	Start time	End time	Leave	Buses
OHA	7:35	7:45	2:05	2:15	18

Wildwood	7:45	7:55	2:15	2:25	18
Secondary	8:45	9:00	3:45	3:52	18

If everything else is equal, students who are have the longest bus route time of more than 60 minutes in the morning would have to be picked up at 6:30 am. Those students would be getting off the bus at approximately 3:20 pm.

For secondary students, those who have the longest bus rides would be picked up at approximately 7:45 am and be dropped off at approximately 4:50 pm.

From Arlen Hviding, “In this scenario, the secondary school day would have to start as late as possible to offset early pick up times and start of the day for Elementary students.” The secondary “late dismissal” is one hour and fifteen minutes later and compared to what they had been accustomed to. Dismissal time of 3:45 would be the latest among the comparison group for secondary schools and almost the latest when the elementary schools are taken into account.

There is an assumption that with this model there would be approximately \$145,000 in additional costs. That is due to the fact that the drivers would be spending a little more time working. This also indicates lengthening the school day by fifteen minutes in the secondary and keeping the day at the elementary schools of six hours and twenty minutes.

It is safe to assume that If a change is made the times listed above may or may not be the ones that are finally chosen by the School Board. They do provide an illustration.

VII. Impacts

A change in the school start and end times, the school calendar, or any other change in schedules will have an impact on the students and staff, their families, and the community. The information below is somewhat speculative as it is trying to predict the future. However, the best judgments are:

A. Students

The research on adolescent sleep is clear that secondary students would benefit from a later school start time. However, if the school day were lengthened to accommodate transportation schedules, secondary students would be home approximately one hour and fifteen minutes later. This would push back activities, after school jobs, limit care for younger siblings, and more.

Elementary students, according to anecdotes from teachers and others suggest that an earlier start to the school day would benefit students. In both Wildwood and O.H. Anderson, the student day starts with responsive classroom and then core instruction. Generally, the school day is

scheduled with core instruction like reading and math happening as early as they can have it scheduled. Having the student day start earlier would provide teachers and students with what appears to be a time more conducive to learning.

B. Families

This would have a big impact on how families as they have grown accustomed to the school district calendar and the school day. While there may be families who believe a very important part of the educational system is custodial, I would argue that the trying to fulfill the vision of engaging, challenging, and inspiring students is much more important. However, a change that could disrupt family schedules from daycare to after school activities would need some lead time to implement. Families have to adjust to school calendars quite often. In the event of snow/cold days, late starts, etc. families do adjust. Several years ago, families adjusted to Wildwood Elementary closing four days earlier so staff could prepare for the demolition of old Wildwood and move things into new Wildwood.

As can be seen below, families will be less likely to take advantage of MAC programming, but they might be more willing to utilize the after school hours. The change in times may impact buses in the afternoon if more students are participating in MAC, but that would make routes less crowded.

C. Staff concerns

Staff had been polled about a potential change in start times and there were five listening sessions that were held to hear thoughts and concerns. The staff surveys were mixed with comments mixed. The listening sessions seemed to focus on personal experiences and there were comments about parents just have to make their secondary students go to bed earlier. Although that is not backed up by research, it was mentioned often by staff at each of the sites.

D. Traffic issues

This is difficult to predict how much a change will be considering that there are new traffic patterns and parking lot changes from construction in the summer of 2017. Secondary students and families will have to adjust.

E. MAC changes

Start Time Switch

The information below is furnished by Dr. Cathy Wyland. A potential start time switch will likely impact community education programs as follows:

School-age care (MAC – Mahtomedi Adventure Club):

- Morning enrollment reduction: Anticipate enrollment reduction in the morning (currently larger than afternoons) as many parents would not require care with an earlier start (their children could take the bus directly to school).
- Revenue loss: If the morning program were eliminated (possible) or scaled back (likely) would likely result in a loss of revenue. Revenue for the morning program is approximately \$300,000. A decline in community education revenue would negatively impact the general fund (upwards of 18% of community ed revenue is used by the general fund. This percentage is in the low single digits in other districts).
- Afternoon enrollment expansion: It is possible that more families would be interested in afternoons. This could have positively impact enrollment and revenue.
- Staffing challenges: With the proposed change, the morning would shift from 2.5 available work hours to 1.25. The afternoon would shift from 2.5 available work hours to 3.75. Fewer staff would be needed in the mornings due to an anticipated drop in enrollment. A split shift is already difficult to fill, but the reduction would make the work even less attractive to potential employees. Afternoon staffing would be difficult. MAC currently employs staff who work other jobs and would not be available earlier in the afternoon (i.e. some are paras in other districts). MAC also employs high schoolers who would no longer be available after school (thus missing out on a potential first job) due to the shift in their dismissal time.

Facilities:

Estimate a reduction in general fund revenue of over \$10,000 since less gym time would be available for athletic association use. The reduction in gym hours would be caused by high school sports starting and running later the current schedule. Associations would lose at least 2 hours a day (and perhaps 3), five days a week, times seven courts, times six months. Not only would the general fund be impacted, but associations may not appreciate having to hold their practices (often for younger children) at later times. Additionally, these groups contribute financially above their facilities fees to help upgrade indoor and outdoor facilities. If their use was curtailed, their contributions may also be curtailed.

Middle school athletics:

In our conference, Henry Sibley shifted to a later start ending school at 3:30 PM. On game day, they either get out of school early (not often) or have all home competitions (more often). This scenario would likely repeat at Mahtomedi. While there may be less expense for buses if all games were home, the need for additional home matches would increase internal competition for facilities. Students would miss the experience of traveling to other schools for competition. Cross country (nearly 100 athletes) and track and field (over 125 students) would likely require

early release. These meets are difficult to host (we struggle to schedule one home meet for each) with high school conflicts plus high school students and/or staff help run these events.

Preschool:

The majority of Mahtomedi families are in the full day program. These are working families who would scramble (financially and otherwise) to figure out what to do with children until they get home. While some attend MAC, it is not the majority.

Early release/late starts

School-age care (MAC):

Staffing would be a challenge. MAC would need to ask staff to stay an additional two hours or come two hours earlier. Due to their individual schedules, it is possible staff would not be available. More parents may want this additional block of care exacerbating a potential staffing shortage. It would also be difficult to charge parents extra for this care even though MAC would have an additional cost. This could negatively impact MAC revenue and, in turn, general fund chargebacks.

School-age parents:

Families would need additional care either before or after school for a minimal number of days. Some feel that sending children home to potentially empty homes may be more of a concern than having children come to school late.

Middle school athletics:

An early release would create an issue for students participating in after school activities. There would be an anticipated 2-hour gap from the early release time to the sport start time. Where would students go and who would be in charge of their care?

Preschool:

The preschool schedule mirrors the elementary schedule. While more time would be available for staff development, staff development for early childhood is not funded by the district (in some districts it is funded by the general fund). The change would necessitate an additional cost to early childhood or require revamping of the currently provided staff development.

VIII. Sports and Activities

The High School Athletic Office has gathered information about the number of students who leave school early to participate in their athletic competitions during the school day. Generally speaking, students in the fall have very few early dismissals. For region or state tournaments they may be dismissed early, but those are unpredictable. For home games or matches, the home team sets the time and so a later start and later ending at the high school would not impact Mahtomedi

students. Other schools, however, are not bound by that and could elect to start at whatever time they wished. Therefore, the fall prediction is the least likely to be accurate,

For Girls Tennis there were six matches that occurred on school days where Mahtomedi was the visiting team. It is possible that with a later start, students would miss approximately 144 hours of instruction.

Cross Country had 5 meets that were scheduled away so it is possible that with the later start that students might miss as much 225 instructional hours.

It does not appear that any other fall sports had early dismissals from school.

The winter sports may be postponed due to weather, but students rarely have to leave school early to participate. The exception is skiing and the estimate of having school last approximately one hour longer would mean that there are approximately 200 hours of instructional time that would be lost.

For Spring Sports, the information is:

The Girls and Boys golf teams would regularly miss three hours when they had matches. There are 12 students per gender that could possibly miss school during these match days. In 2017, there were 12 matches. This number may not be consistent from year to year as many matches are weather dependent and cancellations do occur. Students miss approximately 864 hours of instruction. Adding an hour to the school day would mean that students would miss approximately 1150 hours of instruction.

The Track and Field team had five days when students needed to be dismissed early. Three of these days the dismissal was at 1:30pm, and only approximately 20 students would be dismissed at this time. The other days were for playoff type meets when the whole team would be dismissed at 1:00pm, right around 60 athletes. Students would miss approximately 240 hours of instruction. Adding an hour to the school day would mean that students would miss approximately 420 hours of instruction.

The Softball team needed to be dismissed at 2pm three times this year to make the trip possible to Hastings and Coon Rapids. The schedules for lower levels have games beginning at 4pm. This would be approximately 45 students. Softball players would miss approximately 68 hours of instruction. Adding an hour to the school day would mean that students would miss approximately 200 hours of instruction.

The Baseball team was dismissed twice this year at 2:15pm to beat the traffic and get to Hastings and Coon Rapids. This was approximately 40 students. Baseball players missed approximately 40 hours of instruction. Adding an hour to the school day would mean that students would miss approximately 120 hours of instruction.

Lacrosse was not dismissed early once this year for boys or girls.

To summarize, in 2016-17 there approximately 1200 hours of instructional time that were lost due to athletes being dismissed from school early. Adding approximately an hour to the school day would mean that approximately 2450 hours of instruction would be lost for students leaving school early for activities.

It is important to note that these are estimations and approximations. The calculation may be different from year to year and dependent on number of participants, weather, willingness of other schools to push back the start of their event(s) and others.

Recommendations

Although the parents and staff have heard rumblings about a change in school start times, it is still fairly quiet and any change will be almost certain to draw detractors. However, the experiences of Buffalo and Wayzata (based on conversations with their superintendents) leads me to believe that the benefits outweigh the costs. The research is clear, the scenarios are workable, and my recommendation is to switch the school start times.