Action Plan to Implement Large-Scale Strategies

This section provides recommendations for how to implement two large-scale strategies: universal fourth and fifth grade bicycle education and adult crossing guards. These strategies were listed in Chapter 3: Program Recommendations. This in-depth analysis provides MPS a more detailed plan for the resources required for these transformative changes to SRTS in Minneapolis.

UNIVERSAL FOURTH AND FIFTH GRADE BICYCLE SAFETY EDUCATION

Someday there will be a certainty about students across Minneapolis Public Schools as they leave elementary school and head to middle school: no matter which school the student attended, the student will have the skills and confidence to safely ride a bike on the streets and trails of Minneapolis. In short, universal bike education is just that—one day all fourth and fifth grade students in MPS will participate in quality bicycle education at school during the school day in a safe, supervised setting where they will learn on-road cycling and gain the skills to build their own mobility.

To develop recommendations for a universal bike education program, Alta conducted six key stakeholder interviews with district staff and teachers who are currently involved in bike clubs, bike education, and physical education. The following stakeholders were interviewed:

Mark Trumper – English Language Learner teacher and co-leader of the Pillsbury Pedal Power program, an in-class and after school bike program that teaches bike safety and group riding skills to all fourth graders at Pillsbury Elementary School.

Susan Tuck – Teacher and co-leader of the Pillsbury Pedal Power program

Angie Powell – Adaptive PE lead

Sarah Loch – Health and PE Lead

Elizabeth Bortke – Area Learning Center; District Program Facilitator for K-8 & Middle Schools

Melinda Stapley – Area Learning Center; District Coordinator, GEMS/GiSE and STEM
WHY FOURTH AND FIFTH GRADE?

Elementary school students, typically in fourth and fifth grade, are an ideal age group for universal bike education, as they are old enough to understand the rules of the road and quickly gain bike riding skills, and they are also eager learners who are less self-conscious than older students. Bike education in elementary school will provide students the “keys” in these earlier grades so bike education experiences can continue in middle school and high school.

EQUITY

With 129 miles of on-street bikeways and 97 miles of off-street bikeways, Minneapolis has been ranked the most bike friendly city in the nation by Forbes magazine. Yet access to these bike amenities requires a bicycle and bicycle skills in order to fully experience the joys and reap the benefits of active transportation. At one MPS school, a survey indicated that one third of fourth graders do not know how to ride a bike and a full half do not even own one. Furthermore, some students need special equipment like an adaptive bicycle or tricycle to remove the barrier of access.

Universal bicycle education will open the beauty of Minneapolis, the adventure of bicycling, and life-long healthy, affordable and sustainable transportation to all students. Experiencing their city by bicycle will deepen students’ connections to the broader community and to the city as a whole and help students truly understand that the city is theirs.
EVERY CHILD COLLEGE AND CAREER READY

Every child college and career ready—that is the vision of Minneapolis Public Schools. Acceleration 2020, the MPS Strategic Plan for achieving this vision, emphasizes that everyone plays a part in ensuring the success of our students.

Fifty years of research[1] demonstrates that physical activity is essential to student learning and therefore is a piece of helping MPS students achieve the ambitious academic achievement goals of Acceleration 2020. Research on student physical activity and achievement is so compelling that scientists in the field suggest focus on student wellness is the missing link to close the achievement gap. Universal bike education will increase student physical activity through bicycling, and research suggests academic achievement of these students will also increase.

The positive impacts of education in an inclusive environment also include higher scores in reading and math, improved school attendance, and better outcomes after students leave school. Inclusive practices benefit all students, including peers in general education. Including all students such as those who need adapted tricycles and bicycles is essential to universal bicycle education in MPS.

Another critical foundation to academic achievement is school attendance. When students attend school, they score higher on math and reading tests and they are more likely to graduate on time and enroll in college. Staff indicate that bicycles are a draw that lead to better school attendance and research has shown that access to bicycles can increase school attendance by providing a way for students to independently travel to school.[2] The academic impacts of a universal bike education program can be analyzed over time using attendance data and standardized test results.

[1] From the November 2015 issue of the Journal of School Health: “Researchers have been examining the association between physical activity and academic achievement for almost 50 years...[research] consistently showed that physical activity had a significant positive association with students' cognitive functioning (eg, concentration and memory)... In addition, a recent review, based on a meta-analysis of 20 experimental studies, concluded that students participating in physical activity had improved academic achievement including better concentration and attention, higher achievement tests scores, and higher math scores compared with students who did not.”

OVERVIEW & APPROACH

Currently, the MPS bicycle fleet reaches about 20% of fourth and fifth graders in Minneapolis Public Schools with quality bicycle education. School owned or shared fleets, such as the one at Pillsbury Elementary School, reach additional fourth and fifth grade students with quality bicycle education and experiences. The Area Learning Center’s STEM-based after school and summer bike education programs reach additional students. MPS is also aware of schools and staff who are integrating bike education into classroom, after-school curriculum, and school-wide bicycle events. However, the district doesn’t have a complete list of programs. In order to fully understand where bicycle education is being implemented, MPS should conduct an assessment to understand the bicycle education and school-bicycle experiences of students across the district.

IMPLEMENTATION

A solid foundation for quality bicycle education exists in Minneapolis Public School with the district traveling fleet, the school-owned bicycle fleet, and the Area Learning Center’s STEM-based after school and summer bike education programs. Scaling up these models will achieve the goal to eventually have all 38 elementary schools (with fourth and fifth grade classes) in MPS participate in quality bicycle safety education during the school day. With 2,850 fourth grade students and 2,830 fifth grade students in the district, there are 2-3 classes of each grade in each school. This amounts to a total of approximately 205 classrooms. A hybrid approach of school-owned bicycles and additional traveling fleets is recommended to achieve this goal.

School-owned bicycle fleet:

School-owned fleets have the potential to deeply impact the identity of the school. After students learn to ride and to safely navigate the streets and trails of Minneapolis, worlds are opened up to students. Classrooms can visit historical and cultural sites by bicycle and engage in experiential learning. Bicycles can also be used in other ways as well—at recess, as non-food rewards, in mentorship programs, or as part of a student’s Individualized Educational Plan (IEP). School-owned fleets require significant investment from the school. A school must be fully supportive of the program and be ready to support professional development and training for teachers, using staff time to plan and coordinate bike education, and dedicate existing or new space to bike storage. A system and support for on-going maintenance is crucial.

District traveling bicycle fleet:

District traveling bicycle fleets are suited to schools that are newer to the concept of biking with students, or that only have buy-in with a small number of teachers or even only a single teacher. A ready-to-go bike fleet shows up at the school’s door for a short period of time, often less than two weeks. The traveling bike fleet enables students to learn how to bike safely, but the potential for longer trip or for “biking to learn” is much diminished.

INCLUDING EVERYONE

MPS has a fleet of bikes for students with special needs. Stakeholder interviewees recommended having an Adaptive PE teacher coordinate and work with a school PE teacher, so the students can all learn together. For students who need more specialized attention, the on-bike education can be structured with smaller groups of adaptive PE students.

The Minnesota Department of Health and the Bicycle Alliance of Minnesota are developing an adaptive Walk!Bike!Fun! curriculum. This curriculum could be implemented in adaptive PE so that more students are included in the universal bike education program.
BUILDING SUPPORT

**Internal**

Stakeholder interviewees noted that school staff and teachers are more responsive to new programs when the directive comes from their administration, rather than from the district. MPS SRTS staff should communicate with the Teaching & Learning Department, specifically the Elementary Lead at the District, and strategize for starting the program conversations with the administration, to build enthusiasm and support for the program. When engaging schools not yet implementing quality bicycle safety education, priority should be given to underserved schools. Key partners include other departments such Plant Maintenance and Plant Operations who outfit and transport the trailer and Area Learning Center’s STEM program, with its fertile learning ground of summer programming.

**External**

Non-profits, government entities, bicycle advocacy organization and bike shops will also be important partners to help scale up bicycle education in MPS. These organizations can provide expertise in bike education, funding, and hands-on support. One stakeholder recommended that MPS reach out to the Loppet Foundation, noting their bicycle expertise and that “people that work there know how to thrive in all kinds of conditions outside.”

CURRICULUM AND TRAINING

Currently, all teachers who use the MPS bike fleet use the Walk! Bike! Fun! Pedestrian and Bicycle Safety curriculum as the base for the lessons. The curriculum teaches students basic skills and knowledge needed to ride a bike safely in the street. These teachers are trained in Walk! Bike! Fun! or have completed the Traffic Skills 101 training. Several have gone on to complete League of American Bicyclists training and are now League Cycling Instructor (LCI’s) and can train others to implement Walk!
DISTRICT BIKE FLEET

MPS owns a bicycle fleet that is available to all schools in the district. Purchased in 2014, the fleet has 43 bikes, including one adaptive bike. The bikes are sized to fit elementary and middle school students and housed within a large trailer that moves from school to school for about two weeks at a time. In 2016-2017 the fleet reached more than 1,500 students at 12 different schools—all these students used the bicycles under the guidance of an MPS a PE or health teacher trained in Walk! Bike! Fun! and nearly all the students put their learning into practice with off-campus ride or rides the streets and trails of Minneapolis. In the summer, the fleet is used every day and nearly every hour in the STEM GISE/GEMS program. During the winter the bicycles are cleaned, tuned and maintained by students and staff at Transition Plus in the bike program.

Teachers have reported that the bike education unit is the best unit they teach all year. Parents tend to agree, and staff believe that bike education and field trips have a life-long impacts for students.
Bike! Fun! These experienced and trained teachers are essential to the next steps in achieving universal bicycle education.

The Bicycle Alliance of Minnesota offers trainings for educators interested in implementing the Walk!Bike!Fun! curriculum. The trainings are one day, free to educators, and held all over the state. Educators receive CEUs and the curriculum, in addition to on-bike training. While the training is free of charge, the cost of a substitute teacher to fill in for the day of the training is needed. The cost of a substitute teacher is $200 per day. A stakeholder interviewee said it would be a helpful incentive for the district to cover the cost of the substitute teacher, rather than requiring the individual schools to pay.

Additionally, the district’s LCIs could also conduct the Walk! Bike! Fun! trainings, allowing for more flexibility in scheduling. This approach would allow trainings to be held more frequently and outside of class time. Often schools prefer this approach because it limits the time that a teacher is away from the classroom. It should be noted that there are costs associated with teacher training outside of school hours. It is assumed that these costs are similar to the $200 cost for a substitute teacher.

Furthermore, it is recommended that the MPS LCIs help develop existing curriculum and training to a specific Minneapolis Public Schools audience. For example, teachers have asked for additional training and resources on topics such as how to ride a bike, developing junior bicycle coaches, classroom management strategies, engaging parents in bicycle education and recommendations for specific destinations for bike rides. These teachers’ expertise and experience biking with students is a valuable resource to respond to the needs of our district and city.

Universal bike education includes both in-classroom and on-bike instruction. Ideally, the PE/health teacher, the classroom teachers, and all the staff who work with fourth and fifth graders would become trained in the curriculum together and as part of the training, ride together on routes from school. Realistically, curriculum implementation and training will vary from site to site; some sites will deliver the curriculum in a collaborative model that includes several teachers to maximize on-bike in physical education or other classes. At some schools one teacher will do the majority of all the instruction. A model that encourages collaboration amongst physical education teachers, classroom teachers, and other staff is recommended.

As stated, the first set of Walk! Bike! Fun! lesson can be done in a classroom setting and does not require bicycles. The on-bike lessons should include an on-street ride for the final lesson, with students riding to a nearby park or other public space. MPS uses general field trip guidance around adult to student ratios for off-campus bicycle education experiences, which recommends a ratio of 5:1 for fourth and fifth grade. Every ride and group skill is a little different, as are the needs for adult supervision. Some rides may require more adult supervision and some may require less. The need for more adult supervision is an additional cost of universal bicycle education and is included in Table 5.
The program can continue longer than the standard on-bike lessons and may include weekly bike field trips, as weather, bike availability, and staff time and interest allow. This approach is being used in some of the existing school bike education programs, and is usually implemented with schools that own their own fleet of bicycles.

For the on-bike portion of the program, it is recommended to structure the program as “fourth grade Learn to Bike” and “fifth grade Bike to Learn”. Students would learn bicycle handling skills and rules of the road in fourth grade. The fifth-grade program would expand into a more challenging experience, with educational field trips and longer rides.

**Learn to Bike**

Learning objectives related to bicycling in fourth grade are found in the physical education standards and are focused on developing skills, lifetime fitness that students enjoy, and increasing strength, endurance, and fitness through physical activity. Student experience levels will vary, with many students arriving to the on-bike training having never ridden a bike. Stakeholder interviewees indicated that it is not uncommon for one-quarter to one-third of fourth grade students to have no experience riding a bike.

**Bike to Learn**

Fifth Grade learning objectives in geography and citizenship are perfect for field trips and experiential learning. Literacy skills objectives include vocabulary development and building background knowledge. Nature is ripe for teaching about metaphor and figurative language through experiences. Fifth grade science and engineering learning objectives include emphasis on the scientific method. The MPS Math curriculum has an emphasis on real-world mathematical problems that include measurement, geometry, and data, which bike experiences can readily provide. The current STEM Engineering to Ride curriculum will be a great resource for fifth grade Bike to Learn programming.

**MATERIALS**

**Bike Fleet**

MPS currently has one bike fleet with 43 bikes and helmets appropriate for fourth and fifth grade students. The current bike fleet is generally reserved, as it is used in PE classes and for Walk!Bike!Fun! curriculum. However, the existing use of the fleet is similar to the proposed universal bike education program and that can be used as a good model as MPS moves toward full implementation of the universal bike education program.

A school typically reserves the fleet for two weeks at a time. The district grounds staff is in charge of moving the fleet with a district-owned trailer. Previous implementers indicated that the weather allows bike education to be taught during September, October, April, May, for approximately 16 weeks of potential classes per district-owned fleet.

For biking to be further supported in schools, each school should have their own fleet, which enables teachers to use the bikes for field trips and integrate them into their curriculum. Ideally, each school would have its own fleet, with 30-40 bikes per fleet. Each school also needs a storage location for the bike fleet; either a trailer or a secure location inside the building.

A system of maintenance for the bike fleets is crucial to success of a universal bike program. Indeed, stakeholder interviewees stressed the importance of bikes to have regular tune ups and safety checks. One option for maintenance could be to train existing district maintenance staff to maintain the bikes and use the existing systems that the district uses for maintain other vehicles or equipment. Another option is to contract out the work to a bike shop. The Transition Plus school, which has a vocational focus, currently does some of the maintenance on the district’s one bike fleet. Partnering with local bike shops and others for volunteer maintenance is may help reduce maintenance cost, but a system of reliable bicycle maintenance is essential.
Ongoing funding for equipment is also essential so bicycles can be replaced when they are no longer suitable to ride.

**On-Bike Education Kit**

On-bike education teaches students basic bicycle riding skills like stopping, balancing, signaling, and turning. More advanced education teaches students how to ride on a road or trail, with rides to a local park or other public space. An on-bike education kit (see Table 3) contains the basic equipment and materials needed to conduct a training for students. The kit includes equipment to set up a temporary bike skills course, along with a first aid kit and other items.

**EVALUATION**

An evaluation process will be an important element in understanding how many students were reached in the program, program successes and challenges, and valuable lessons learned for improving the program moving forward. An evaluation process could be developed with the following elements:

- Collect number of students using bikes and number of students learning to bike.
- Consider collecting an estimation of miles traveled and a list of destinations ridden to as part of bike education and field trips.
- Provide a process for teachers to identify issues, needs, and successes.
- Analyze attendance data at schools with bike education programs to see if bike education has a positive impact on attendance.
- Monitor condition of district and school bike fleets to gain a better understanding of bike maintenance and replacement needs.

Evaluation tools should be created by the district and distributed to all fourth and fifth grade teachers to continually improve the program.

Teachers can also track how well students are understanding and retaining the curriculum information by using pre- and post-program tests. The Walk!Bike!Fun! curriculum provides a Resource Guide, which includes a pre- and post-curriculum test that teachers can administer to students to track student progress.
### TABLE 3. ON-BIKE EDUCATION KIT CONTENTS

<table>
<thead>
<tr>
<th>ITEM</th>
<th>PRICE</th>
<th>QTD.</th>
<th>TOTAL COST</th>
<th>NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chalk</td>
<td>$7</td>
<td>1</td>
<td>$7</td>
<td>Temporary spray chalk used to layout course</td>
</tr>
<tr>
<td>Safety vests</td>
<td>$5</td>
<td>45</td>
<td>$225</td>
<td>1 per student and 5 for leaders</td>
</tr>
<tr>
<td>First aid kit</td>
<td>$15</td>
<td>1</td>
<td>$15</td>
<td>Simple first aid for minor injuries</td>
</tr>
<tr>
<td>Basic repair kit</td>
<td>$25</td>
<td>1</td>
<td>$25</td>
<td>Flat repair and other minor repair kit</td>
</tr>
<tr>
<td>Plastic storage bin</td>
<td>$20</td>
<td>1</td>
<td>$20</td>
<td>To hold gear and equipment</td>
</tr>
<tr>
<td>Whistle</td>
<td>$2</td>
<td>5</td>
<td>$10</td>
<td>1 per staff/teacher</td>
</tr>
<tr>
<td>Traffic cones</td>
<td>$4</td>
<td>15</td>
<td>$60</td>
<td>To mark the route</td>
</tr>
<tr>
<td>Megaphone</td>
<td>$100</td>
<td>1</td>
<td>$100</td>
<td>For amplifying sound when giving instructions</td>
</tr>
</tbody>
</table>

**Cost per kit** $462

### TABLE 4. START-UP COSTS FOR UNIVERSAL FOURTH AND FIFTH GRADE BICYCLE SAFETY EDUCATION

<table>
<thead>
<tr>
<th>ITEM</th>
<th>PRICE</th>
<th>SCALE-UP EXISTING PROGRAM*</th>
<th>MEDIUM PROGRAM**</th>
<th>FULL PROGRAM***</th>
<th>NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bike fleet</td>
<td>$12,000 /fleet</td>
<td>$12,000</td>
<td>$60,000</td>
<td>$456,000</td>
<td>Includes 40 bikes at $300/each</td>
</tr>
<tr>
<td>Adaptive bikes</td>
<td>$2,000/ fleet</td>
<td>$2,000</td>
<td>$10,000</td>
<td>$76,000</td>
<td>1-3 adaptive bikes/ fleet</td>
</tr>
<tr>
<td>Bike Trailer</td>
<td>$8,000</td>
<td>$8,000</td>
<td>$40,000</td>
<td>$304,000</td>
<td>8’ x 24’ enclosed trailer can hold 40 bikes****</td>
</tr>
<tr>
<td>Helmets</td>
<td>$450</td>
<td>$450</td>
<td>$2,250</td>
<td>$17,100</td>
<td>Includes 45 helmets at $10/each</td>
</tr>
<tr>
<td>On-bike education kit</td>
<td>$462</td>
<td>$462</td>
<td>$2,310</td>
<td>$17,556</td>
<td></td>
</tr>
</tbody>
</table>

**Subtotal** $22,912 $114,560 $870,656

<table>
<thead>
<tr>
<th>Contingency</th>
<th>10% of total</th>
<th>$2,291</th>
<th>$11,456</th>
<th>$87,065</th>
<th>For unforeseen costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Cost</td>
<td></td>
<td>$25,203</td>
<td>$126,016</td>
<td>$957,721</td>
<td></td>
</tr>
</tbody>
</table>

*1 fleet, traveling to 8 schools per year
**5 schools with their own fleet at each school
***38 schools with their own fleet at each school
****Schools can also consider adding a secured storage area on site (approximate cost $12,000 to build)
COSTS

Table 4 describes the start-up costs for implementing one-school program, a medium-implementation program and a district-wide universal bike education program. In addition to the initial start-up costs, there will be overhead costs for running the program. A district bike education coordinator would be needed to oversee the program, as hands-on support is necessary to get the program up and running. The bike education coordinator would also be responsible for coordinating volunteers for the program, such as on-street ride support, bike maintenance, and other volunteer positions.

There are also ongoing costs (see Table 5) to run the program, such as paying for substitute teachers or training time when teachers are taking the Walk! Bike! Fun! curriculum training course. Bike maintenance should also be considered an ongoing cost, with the cost dependent on who maintains the bikes (existing maintenance staff, vocational students, or a local bike shop).

Many bike vendors will include one year of maintenance in the contract, but after that, it is important to have a local bike shop or maintenance staff person available to work on the bikes. Stakeholder interviewees indicated that, if the bikes are to be used daily, bike repair and maintenance will likely be needed daily or multiple times a week. It is recommended that schools partner with a local bike shop and/or that the schools train staff. The district could also consider providing a basic maintenance training to teachers and staff who are participating in the universal bike education program. Many bike shops offer free trainings that teachers and staff could utilize at no cost to the district.

A local bike shop with experience maintaining school bike fleets estimated $45 per bike, per year is the typical cost. For example, to maintain one fleet of 40 bikes, the district can expect to pay $1,800 per year in maintenance costs. For a medium-implementation scenario with five bike fleets and 200 bikes, the district can expect to pay $9,000 per year in bike maintenance if maintenance is completed by an organization outside of MPS. For a full-implementation scenario with 38 bike fleets the district can expect to pay $68,400 per year in maintenance.

NEXT STEPS FOR UNIVERSAL BIKE EDUCATION

The following next steps should be taken by the district for expanding current bike programming in MPS to every school with fourth and fifth grade students:

▪ Survey all schools to learn who has bikes and how those bikes are being used by schools and staff.
▪ Prioritize schools expanding bike education at underserved schools.
▪ Build internal and external partnerships to advance universal bike education.
▪ Continue to train teachers at all levels. New teachers can be engaged with Walk! Bike! Fun! Training, TS 101 or MPS bike trainings. Experienced teachers should be supported in pursuing LCI training.
▪ Develop MPS-specific curriculum resources and training by engaging current MPS LCI’s and using Walk! Bike! Fun! as its base.
▪ Identify funding sources or grants to provide staffing, training, bike fleets, storage, and ongoing maintenance.
▪ Develop an ongoing evaluation process. Collect number of students using bikes and number of students learning to bike. Consider also collecting an estimation of miles traveled and a list of destinations. Provide a process for teachers to identify issues, needs, and successes. Analyze attendance data at schools with bike education programs to see if bike education has a positive impact on attendance. Monitor condition of district and school bike fleets to gain a better understanding of bike maintenance and replacement needs.
### TABLE 5. ONGOING COSTS FOR UNIVERSAL FOURTH AND FIFTH GRADE BICYCLE SAFETY EDUCATION

<table>
<thead>
<tr>
<th>ITEM</th>
<th>PRICE</th>
<th>SCALE-UP EXISTING PROGRAM*</th>
<th>MEDIUM PROGRAM**</th>
<th>FULL PROGRAM***</th>
<th>NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>District Coordinator (1.0 FTE)</td>
<td>$55,000-80,000</td>
<td></td>
<td></td>
<td></td>
<td>Per year</td>
</tr>
<tr>
<td>School-level staffing: Training, Planning, and Coordination at 1 school</td>
<td>$6,500/per school</td>
<td>$32,500</td>
<td>$247,000</td>
<td></td>
<td>Cost applies only to schools with a dedicated school bike fleet</td>
</tr>
<tr>
<td>Bike Maintenance</td>
<td>$1,800/fleet</td>
<td>$1,800</td>
<td>$9,000</td>
<td>$68,400</td>
<td></td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td>$63,300-88,300</td>
<td>$56,800-81,800</td>
<td>$96,500-121,500</td>
<td>$370,400-395,400</td>
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</tr>
<tr>
<td>Contingency</td>
<td>10% of total</td>
<td>$5,680-$8,180</td>
<td>$9,650-$12,150</td>
<td>$37,040-$39,540</td>
<td>For unforeseen costs</td>
</tr>
<tr>
<td><strong>Total Cost</strong></td>
<td>$62,480-$89,980</td>
<td>$106,150-$133,650</td>
<td>$407,440-$434,940</td>
<td></td>
<td></td>
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</table>