APPENDICES A-Z

NOTES

Appendix A

Acronyms and Definitions

ACRONYMS

AASHTO	American Association of State Highway and Transportation Officials
ACE	Active Community Environment
ADA	Americans with Disabilities Act
CDC	Centers for Disease Control and Prevention
EPA	Environmental Protection Agency
FHWA	Federal Highway Administration
HHS	U.S. Department of Health & Human Services
LMB	League of Michigan Bicyclists
MAP-21	Moving Ahead for Progress in the 21st Century
MDCH	Michigan Department of Community Health
MDE	Michigan Department of Education
MDOT	Michigan Department of Transportation
MTGA	Michigan Trails and Greenways Alliance
MUTCD	Manual on Uniform Traffic Control Devices
NCBW	National Center for Bicycling & Walking
NCSRTS	National Center for Safe Routes to School
NHTSA	National Highway Traffic Safety Administration
NPTS	Nationwide Personal Transportation Survey
PBIC	Pedestrian & Bicycle Information Center
RTC	Rails-to-Trails Conservancy
SAFETEA-LU	Safe, Accountable, Flexible, Efficient Transportation Equity Act for the 21st Century—A Legacy for Users
SR2S	Safe Routes to School (Michigan planning program acronym)
SRTS	Safe Routes to School (federal program acronym)
SRTSNP	Safe Routes to School National Partnership
TAP	Transportation Alternatives Program
TE	Transportation Enhancement
USDOT	United States Department of Transportation

DEFINITIONS

AASHTO Standards are nationally recognized best practice guidelines for bicycle and pedestrian facility design.

Americans with Disabilities Act (ADA) is a federal act that contains regulations that govern the building of new structures. This ensures that persons with disabilities have equal access and also protection from entering an intersection unknowingly (e.g. curb ramps that have a textured surface so visually impaired individuals know when entering an intersection).

Built environment refers to physical structures that have been built by human beings (e.g. subdivision road networks) and that may or may not encourage walking and biking.

Connectivity is the connection of streets, trails, sidewalks and bicycle facilities to form a network for non-motorized travel.

Context-sensitive design means design that takes community variables and perspectives into consideration when planning and designing transportation facilities.

Engineering for SR2S refers to actions or plans to create, maintain or operate the physical facilities associated with safe walking and biking. These plans range from signs and pavement markings to sidewalks and traffic calming.

continued on next page

Appendix A

Acronyms and Definitions, cont.

Facilities is a term engineers use to describe many types of physical structures (e.g. sidewalks, traffic signals, bicycle lanes).

Geographic Information System (GIS) is a computer system capable of capturing, storing, analyzing, and displaying geographically referenced information; that is, data identified according to location. Practitioners also define a GIS as including the procedures, operating personnel, and spatial data that go into the system. (Source: Environmental Systems Research Institute)

Manual on Uniform Traffic Control Devices (MUTCD) is a manual that contains national guidelines for signs and pavement markings, including markings in school zones. State and local jurisdictions may have their own guidelines.

Moving Ahead for Progress in the 21st Century (MAP-21) is the name given to the 2-year, $105 billion reauthorization of federal highway and transit programs that President Barack Obama signed into law in July 2012.

Multi-modal refers to a transportation system that supports different modes or means of travel, such as walkways, bikeways, roads, buses and railroads.

Safe, Accountable, Flexible, Efficient Transportation Equity Act for the 21st Century—A Legacy for Users (SAFETEA-LU) is the name given to the 6-year, $286 billion reauthorization of federal highway and transit programs that President George W. Bush signed into law in August 2005.

School home area or school enrollment area is the geographic area in which students attending the school live (except for school-of-choice students).

School Traffic Control Plan is a comprehensive school traffic plan that includes signing and pavement markings on streets around school.

School walking area is the area inside of school home area in which busing service is not provided. Distance to school varies by school or school district.

School zone is the area directly adjacent to school; often 1-2 blocks around the school. This is the area where special school signing and markings occur.

Sidewalk buffers are planting strips, parked cars, bike lanes or street furniture that separate the sidewalk from the road.

Smart Growth refers to development that is environmentally sensitive, economically viable, community-oriented, and sustainable. A smart-growth plan promotes environmental quality, energy conservation, open space and farmland, and strong neighborhoods. (Source: Urban Land Institute)

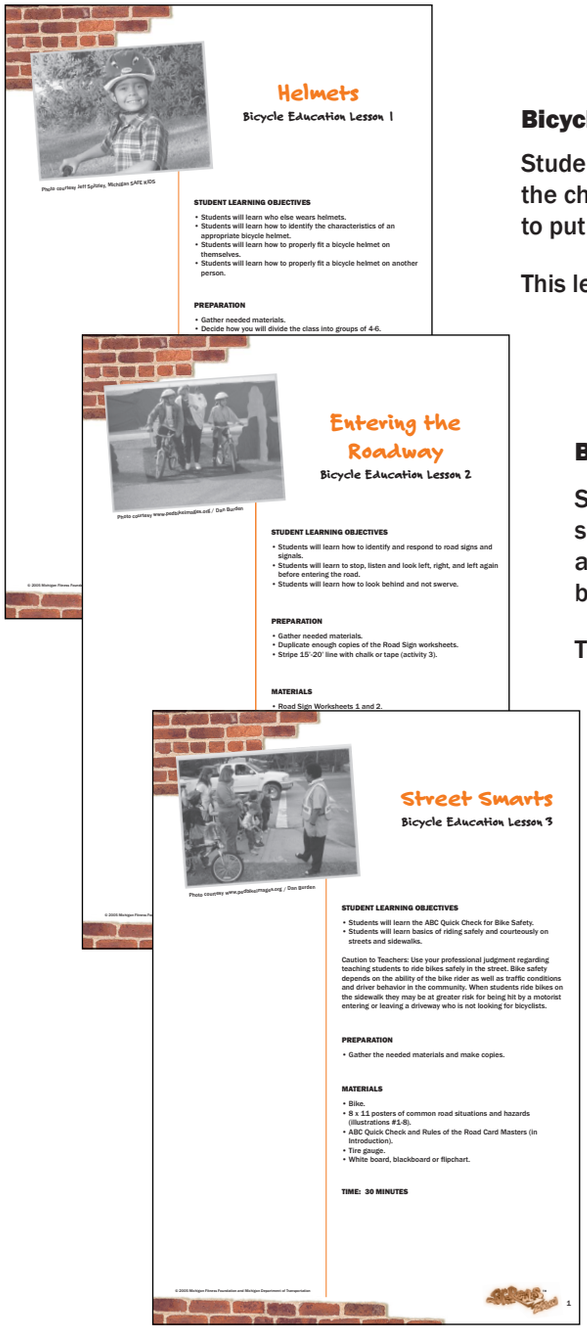
Traffic Calming involves changes in the number of lanes, street alignment (e.g. traffic circles), the installation of barriers or speed bumps, and other physical measures to reduce traffic speeds and/or cut-through volumes, in the interest of street safety, livability, and other public purposes. (Source: Institute of Transportation Engineers)

Transportation Alternatives Program (TAP) is authorized under the Moving Ahead for Progress in the 21st Century (MAP-21) Act. It provides funding for programs and projects defined as transportation alternatives including the Safe Routes to School Program (SR2S).

Appendix B

Bicycle Education Lessons and Bikeability Checklist

Five bicycle education lessons are located on the enclosed CD and may be copied and distributed as needed. The lessons cover basic information and essential skills for safe bicycling.



Bicycle Education Lesson 1: Helmets

Students will learn who else wears helmets; how to identify the characteristics of an appropriate bicycle helmet; and how to put on and properly fit a bicycle helmet on themselves.

This lesson will take approximately 25 minutes.

Bicycle Education Lesson 2: Entering the Roadway

Students will learn how to identify and respond to road signs and signals; how to stop, listen and look left, right, and left again before entering the road; and how to look behind and not swerve.

This lesson will take approximately 35 minutes.

Bicycle Education Lesson 3: Street Smarts

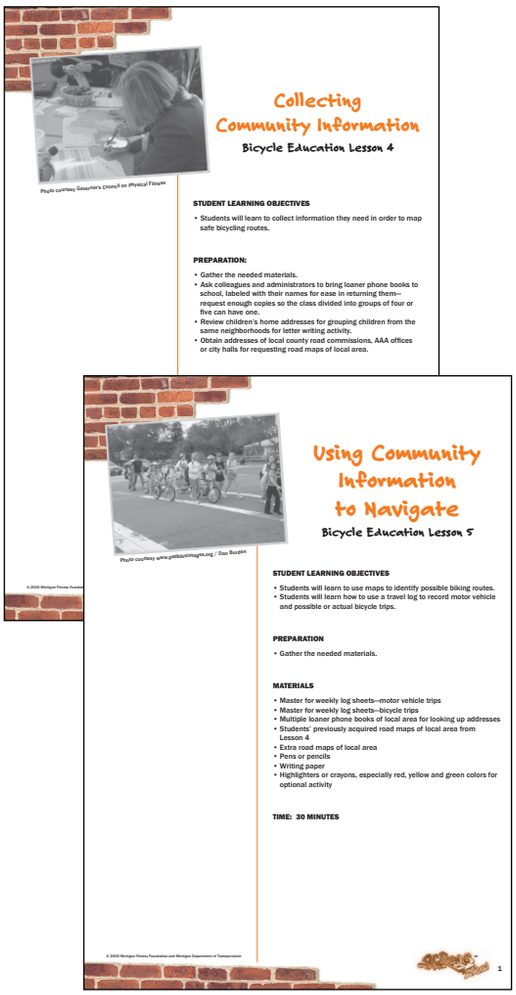
Students will learn the ABC Quick Check for Bike Safety and the basics of riding safely and courteously on streets and sidewalks.

This lesson will take approximately 30 minutes.

continued on next page

Appendix B

Bicycle Education Lessons and Bikeability Checklist



Bicycle Education Lesson 4: Collecting Community Information

Students will learn to collect information they need in order to map safe bicycling routes.

This lesson will take approximately 30 minutes.

Bicycle Education Lesson 5: Using Community Information to Navigate

Students will learn to use maps to identify possible biking routes and how to use a travel log to record motor vehicle and possible or actual bicycle trips.

This lesson will take approximately 30 minutes.

Appendix B

Bicycle Education Lessons and Bikeability Checklist

Additional bicycle safety education materials on the CD include:

- Background information for teachers.
- Bicycle safety and the curriculum (art, music, history/social studies, language arts, physical education and health, and science).
- Parent, teacher, school administrator and student roles in bicycle safety.
- Illustrations of helmet wearers (athletes, fire fighters, etc.).
- Classroom worksheets and handouts.

Worksheets for use in class:

Wear It Right
Road Signs 1
Road Sign Quiz
It's the Law
Hand Signals 1
Hand Signals 2
Driveways 1
Driveways 2
Bike Manners
Right-hand Side of the Road
Rules of the Road card
ABC Quick Check card
Motor Vehicle Mileage Log
Bicycle Trip Mileage Log

Handouts to send home:

Wear It Right
Children and Bike Safety
Practice Bike Safety Together
The Right Bike
Rules of the Road card
ABC Quick Check card
Motor Vehicle Mileage Log
Bicycle Trip Mileage Log

IMPORTANT PARTNERS FOR EFFECTIVE BICYCLE EDUCATION

Safe bicycling to school requires a four-way partnership between parents, teachers, school administrators and students. Everyone has a role!

Parents provide the first safety messages to their children and set a good example when they ride a bicycle safely. Parents should also ensure that children have properly fitted and maintained bicycles and helmets, and help their children to find safe routes to school.

Teachers reinforce and expand safety messages learned at home with classroom activities and lessons. Teachers can incorporate various aspects of biking and safety into lesson plans for math, reading, science, social studies, physical education and more.

School administrators support bike safety by encouraging bike safety lesson plans and activities offered by the teachers. School administrators also advise on how to change the school grounds to accommodate bike parking for the students.

Local experts on bicycle safety (e.g. police officers and bicycle club representatives) work with school teachers, administrators, parents and other community volunteers by teaching bike safety and conducting safety activities such as bike camps. See the list of Michigan bicycle clubs in the Bicycling Resources folder on the CD.

Students play an important role in making it safer to bike to school by remembering to use what they learn. Even young students can practice safe biking under adult supervision.

Appendix B

Bicycle Education Lessons and Bikeability Checklist

The Bikeability Checklist on pages 68-72 was developed by the Pedestrian and Bicycle Information Center (PBIC) and is available for download on the PBIC bicycling website, www.bicyclinginfo.org.

Bikeability Checklist

How bikeable is your community?

Riding a bike is fun!

Bicycling is a great way to get around and to get your daily dose of physical activity. It's good for the environment, and it can save you money. No wonder many communities are encouraging people to ride their bikes more often!

Can you get to where you want to go by bike?

Some communities are more bikeable than others: how does yours rate? Read over the questions in this checklist and then take a ride in your community, perhaps to the local shops, to visit a friend, or even to work. See if you can get where you want to go by bicycle, even if you are just riding around the neighborhood to get some exercise.

At the end of your ride, answer each question and, based on your opinion, circle an overall rating for each question. You can also note any problems you encountered by checking the appropriate box(es). Be sure to make a careful note of any specific locations that need improvement.

Add up the numbers to see how you rated your ride. Then, turn to the pages that show you how to begin to improve those areas where you gave your community a low score.

Before you ride, make sure your bike is in good working order, put on a helmet, and be sure you can manage the ride or route you've chosen. Enjoy the ride!

NHTSA
National Highway Traffic Safety Administration

Pedestrian and Bicycle Information Center

U.S. Department of Transportation

Appendix B

Bicycle Education Lessons and Bikeability Checklist

Go for a ride and use this checklist to rate your neighborhood's bikeability.

How bikeable is your community?

Location of bike ride (be specific): _____

Rating Scale: 1 awful · 2 many problems · 3 some problems · 4 good · 5 very good · 6 excellent

1. Did you have a place to bicycle safely?

a) On the road, sharing the road with motor vehicles?

☐ Yes ☐ Some problems (please note locations):
- ☐ No space for bicyclists to ride
- ☐ Bicycle lane or paved shoulder disappeared
- ☐ Heavy and/or fast-moving traffic
- ☐ Too many trucks or buses
- ☐ No space for bicyclists on bridges or in tunnels
- ☐ Poorly lighted roadways

Other problems: _____

_____

b) On an off-road path or trail, where motor vehicles were not allowed?

☐ Yes ☐ Some problems:
- ☐ Path ended abruptly
- ☐ Path didn't go where I wanted to go
- ☐ Path intersected with roads that were difficult to cross
- ☐ Path was crowded
- ☐ Path was unsafe because of sharp turns or dangerous downhills
- ☐ Path was uncomfortable because of too many hills
- ☐ Path was poorly lighted

Other problems: _____

_____

Overall "Safe Place To Ride" Rating: (circle one)

1 2 3 4 5 6

2. How was the surface that you rode on?

☐ Good ☐ Some problems, the road or path had:
- ☐ Potholes
- ☐ Cracked or broken pavement
- ☐ Debris (e.g. broken glass, sand, gravel, etc.)
- ☐ Dangerous drain grates, utility covers, or metal plates
- ☐ Uneven surface or gaps
- ☐ Slippery surfaces when wet (e.g. bridge decks, construction plates, road markings)
- ☐ Bumpy or angled railroad tracks
- ☐ Rumble strips

Other problems: _____

_____

Overall Surface Rating: (circle one)

1 2 3 4 5 6

3. How were the intersections you rode through?

☐ Good ☐ Some problems:
- ☐ Had to wait too long to cross intersection
- ☐ Couldn't see crossing traffic
- ☐ Signal didn't give me enough time to cross the road
- ☐ Signal didn't change for a bicycle
- ☐ Unsure where or how to ride through intersection

Other problems: _____

_____

Overall Intersection Rating: (circle one)

1 2 3 4 5 6

Continue the checklist on the next page...

Appendix B

Bicycle Education Lessons and Bikeability Checklist

4. Did drivers behave well?

☐ Yes ☐ Some problems, drivers:

- ☐ Drove too fast
- ☐ Passed me too close
- ☐ Did not signal
- ☐ Harassed me
- ☐ Cut me off
- ☐ Ran red lights or stop sign

Other problems: _____

_____

Overall Driver Rating: (circle one)

1 2 3 4 5 6

5. Was it easy for you to use your bike?

☐ Yes ☐ Some problems:

- ☐ No maps, signs, or road markings to help me find my way
- ☐ No safe or secure place to leave my bicycle at my destination
- ☐ No way to take my bicycle with me on the bus or train
- ☐ Scary dogs
- ☐ Hard to find a direct route I liked
- ☐ Route was too hilly

Other problems: _____

_____

Overall Ease of Use Rating: (circle one)

1 2 3 4 5 6

6. What did you do to make your ride safer?

Your behavior contributes to the bikeability of your community. Check all that apply:

- ☐ Wore a bicycle helmet
- ☐ Obeyed traffic signal and signs
- ☐ Rode in a straight line (didn't weave)
- ☐ Signaled my turns
- ☐ Rode with (not against) traffic
- ☐ Used lights, if riding at night
- ☐ Wore reflective and/or retroreflective materials and bright clothing
- ☐ Was courteous to other travelers (motorist, skaters, pedestrians, etc.)

7. Tell us a little about yourself.

In good weather months, about how many days a month do you ride your bike?

- ☐ Never
- ☐ Occasionally (one or two)
- ☐ Frequently (5-10)
- ☐ Most (more than 15)
- ☐ Every day

Which of these phrases best describes you?

- ☐ An advanced, confident rider who is comfortable riding in most traffic situations
- ☐ An intermediate rider who is not really comfortable riding in most traffic situations
- ☐ A beginner rider who prefers to stick to the bike path or trail

How does your community rate? Add up your ratings and decide.

(Questions 6 and 7 do not contribute to your community's score)

1. _____	**26-30**	Celebrate! You live in a bicycle-friendly community.
2. _____	**21-25**	Your community is pretty good, but there's always room for improvement.
3. _____	**16-20**	Conditions for riding are okay, but not ideal. Plenty of opportunity for improvements.
4. _____	**11-15**	Conditions are poor and you deserve better than this! Call the mayor and the newspaper right away.
5. _____		
Total _____	**5-10**	Oh dear. Consider wearing body armor and Christmas tree lights before venturing out again.

Did you find something that needs to be changed?

On the next page, you'll find suggestions for improving the bikeability of your community based on the problems you identified. Take a look at both the short- and long-term solutions and commit to seeing at least one of each through to the end. If you don't, then who will?

During your bike ride, how did you feel physically? Could you go as far or as fast as you wanted to? Were you short of breath, tired, or were your muscles sore? The next page also has some suggestions to improve the enjoyment of your ride.

Bicycling, whether for transportation or recreation, is a great way to get 30 minutes of physical activity into your day. Riding, just like any other activity, should be something you enjoy doing. The more you enjoy it, the more likely you'll stick with it. Choose routes that match your skill level and physical activities. If a route is too long or hilly, find a new one. Start slowly and work up to your potential.

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Appendix B

Bicycle Education Lessons and Bikeability Checklist

Now that you know the problems, you can find the answers.

Improving your community's score...

1. Did you have a place to bicycle safely?

	What you can do immediately	What you and your community can do with more time
a) On the road?		
No space for bicyclists to ride (e.g. no bike lane or shoulder; narrow lanes) Bicycle lane or paved shoulder disappeared Heavy and/or fast-moving traffic Too many trucks or buses No space for bicyclists on bridges or in tunnels Poorly lighted roadways	• pick another route for now • tell local transportation engineers or public works department about specific problems; provide a copy of your checklist • find a class to boost your confidence about riding in traffic	• participate in local planning meetings • encourage your community to adopt a plan to improve conditions, including a network of bike lanes on major roads • ask your public works department to consider "Share the Road" signs at specific locations • ask your state department of transportation to include paved shoulders on all their rural highways • establish or join a local bicycle advocacy group
b) On an off-road path or trail?		
Path ended abruptly Path didn't go where I wanted to go Path intersected with roads that were difficult to cross Path was crowded Path was unsafe because of sharp turns or dangerous downhills Path was uncomfortable because of too many hills Path was poorly lighted	• slow down and take care when using the path • find an on-street route • use the path at less crowded times • tell the trail manager or agency about specific problems	• ask the trail manager or agency to improve directional and warning signs • petition your local transportation agency to improve path/roadway crossings • ask for more trails in your community • establish or join a "Friends of the Trail" advocacy group

2. How was the surface you rode on?

Potholes Cracked or broken pavement Debris (e.g. broken glass, sand, gravel, etc.) Dangerous drain grates, utility covers, or metal plates Uneven surface or gaps Slippery surfaces when wet (e.g. bridge decks, construction plates, road markings) Bumpy or angled railroad tracks Rumble strips	• report problems immediately to public works department or appropriate agency • keep your eye on the road/path • pick another route until the problem is fixed (and check to see that the problems are fixed) • organize a community effort to clean up the path	• work with your public works and parks department to develop a pothole or hazard report card or online link to warn the agency of potential hazards • ask your public works department to gradually replace all dangerous drainage grates with more bicycle-friendly designs, and improve railroad crossings so cyclists can cross them at 90 degrees • petition your state DOT to adopt a bicycle-friendly rumble-strip policy

3. How were the intersections you rode through?

Had to wait too long to cross intersection Couldn't see crossing traffic Signal didn't give me enough time to cross the road The signal didn't change for a bicycle Unsure where or how to ride through intersection	• pick another route for now • tell local transportation engineers or public works department about specific problems • take a class to improve your riding confidence and skills	• ask the public works department to look at the timing of the specific traffic signals • ask the public works department to install loop-detectors that detect bicyclists • suggest improvements to sightlines that include cutting back vegetation; building out the path crossing; and moving parked cars that obstruct your view • organize community-wide, on-bike training on how to safely ride through intersections

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Appendix B

Bicycle Education Lessons and Bikeability Checklist

Improving your community's score...

(continued)

	What you can do immediately	What you and your community can do with more time
4. Did drivers behave well?		
Drivers: Drove too fast Passed me too close Did not signal Harassed me Cut me off Ran red lights or stop signs	• report unsafe drivers to the police • set an example by riding responsibly; obey traffic laws; don't antagonize drivers • always expect the unexpected • work with your community to raise awareness to share the road	• ask the police department to enforce speed limits and safe driving • encourage your department of motor vehicles to include "Share the Road" messages in driver tests and correspondence with drivers • ask city planners and traffic engineers for traffic calming ideas • encourage your community to use cameras to catch speeders and red light runners
5. Was it easy for you to use your bike?		
No maps, signs, or road markings to help me find my way No safe or secure place to leave my bicycle at my destination No way to take my bicycle with me on the bus or train Scary dogs Hard to find a direct route I liked Route was too hilly	• plan your route ahead of time • find somewhere close by to lock your bike; never leave it unlocked • report scary dogs to the animal control department • learn to use all of your gears!	• ask your community to publish a local bike map • ask your public works department to install bike parking racks at key destinations; work with them to identify locations • petition your transit agency to install bike racks on all their buses • plan your local route network to minimize the impact of steep hills • establish or join a bicycle user group (BUG) at your workplace
6. What did you do to make your ride safer?		
Wore a bicycle helmet Obeyed traffic signals and signs Rode in a straight line (didn't weave) Signaled my turns Rode with (not against) traffic Used lights, if riding at night Wore reflective materials and bright clothing Was courteous to other travelers (motorists, skaters, pedestrians, etc.)	• go to your local bike shop and buy a helmet; get lights and reflectors if you are expecting to ride at night • always follow the rules of the road and set a good example • take a class to improve your riding skills and knowledge	• ask the police to enforce bicycle laws • encourage your school or youth agencies to teach bicycle safety (on-bike) • start or join a local bicycle club • become a bicycle safety instructor

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Appendix C

Classroom Learning Activities

There are many ways to link SR2S to the K-6 curriculum. The following examples of activities represent a few of the options. Share the activities with classroom teachers.

1. Travel mode unit examples:

   A. Students keep a travel diary for two weeks, entering all trips made and mode of transportation.

   B. Students list various travel modes (e.g. walk, bike, in-line skating, school bus, car, city bus, cab, subway, train, cable car, horse, mule, etc.) used in the U.S. and globally.

   C. Students pick a mode and draw a picture, or do library research on the history of fuel consumption for that type of travel.

   D. Class decides which travel modes are used, or could be used, in their school.

   E. Class creates a poster of modes and each day a student enters the number of students traveling to school that way.

2. Teacher-led math, science, health or social studies problem-solving examples:

   A. If it takes five gallons of gas for the school bus to complete its route, how many gallons are used in one week? In one month?

   B. In some parts of the United States, students take a subway, train or ride a horse to get to school. Why?

   C. Physical activity helps people be healthy. The more steps a person takes each day, the more physical activity he/she gets. How can you use recess time to get physical activity while also spending time with your friends?

   D. A by-product of cars and buses that use gasoline is carbon monoxide. How does carbon monoxide affect plants? How does it affect people?

3. Students draw maps of the walk from their home to school and/or illustrate the walk with things they see along the way. See the Behaviors and Attitudes module for a detailed description of a mapping activity.

4. Elementary students complete a pedestrian safety education program using a curriculum such as the one produced the National Highway Traffic Safety Administration (NHTSA). The curriculum is free and can be downloaded at www.nhtsa.gov.

Appendix D

Do Something Fun

People of every age like to participate in activities that are fun, and when activities are fun people are more likely to participate. Safe Routes to School teams across the country, and the world, use this principle to motivate parents, students, and community members to walk and bicycle to school and to improve the safety of routes youth use or could use.

In fact, effective Safe Routes to School initiatives almost always include a number of fun encouragement strategies. Remember, encouragement is one of the 5 Es to success.

The following ideas are only a start on ways to build fun into your SR2S campaign. School teachers and parents are experts on motivating behavior change, so be sure to ask for their advice!

Fun Ways to Encourage Walking and Biking to School:

- Hold Walk to School Day each October. Include a celebration on the playground or in the gymnasium and invite high school athletes, band members or other older role models to be part of the celebration.
- Start a walking school bus and develop "I Spy" themes for the students as they walk.
- Offer an adult walking club that meets at school during the day or early evening and walks together for good health and social time.
- Create some fun options for ways teachers can be physically active during the school day.
- Start a contest between students and adults (parents, teachers, etc.) and see who can accumulate the most steps or cover the most distance in a given period of time.

Start a Golden Shoe award for the class that has the most students walking to school. (See the Marin County Safe Routes to School website, below, for details).

Conduct a bike rodeo and invite special guests that students will be excited to see. Ask area businesses to donate safe bicycle helmets and hold drawings for kids to win them.

Fun Ways to Encourage Parents to Follow Drop-off and Pick-up Procedures:

- Dress up like clowns and give incentives (rewards) to the adult driver and/or students being driven who follow the safe drop-off and pick-up rules. Don't use candy as the incentive...try stickers, bumper stickers, pencils or useful items for the kids and likewise provide items for adults that make sense in your community.
- Ask local law enforcement to visit your school periodically and provide "Caught Being Safe" incentives (e.g. coupons for a food item). While police officer presence isn't always perceived as fun, it can be!
- Ask parents in your community what would help them follow the rules...you might learn a couple of easy fixes that you can implement right away.
- Provide bumper stickers or other fun incentives at the school carnival or school family activity night for adults and students that "take the pledge" to use safe routes and bicycle or walk to school.

Visit the Michigan Safe Routes to School website for more examples of fun activities and contests to encourage safe walking and biking.

Appendix E

5 Es To Success: Educate, Encourage, Engineer, Enforce and Evaluate

Easy to remember and understand, the "5 Es" are used by advocates for Safe Routes to School to describe the range of problems and solutions associated with walking and biking to school, as well as the importance of evaluation. When barriers to safe walking and biking are addressed with a combination of 5E strategies, greater success is likely.

SR2S programs almost always have some combination of:

- *Education* objectives to teach safe walking and biking skills;
- *Encouragement* approaches to shift parent and/or student motivation;
- *Enforcement* strategies to discourage dangerous behaviors;
- *Engineering* treatments to improve the physical setting.
- *Evaluation* strategies to measure SR2S attitudes, beliefs, behaviors and outcomes.

There are two main sections in this appendix. First, several real-world examples are provided to illustrate problems and solutions identified by SR2S teams in their school community. Every SR2S initiative has its own character and set of issues; however, there are common themes across schools and the 5 Es provide a framework for sharing ideas and successes.

Second, examples of education, encouragement, enforcement, engineering, and evaluation strategies are provided to illustrate the scope of issues SR2S teams might encounter and how to respond to these. See Appendix J—Join a National SR2S Family for links to websites where many more ideas can be found.

REAL WORLD EXAMPLES OF USING THE 5 ES

Each case is a composite example of problems experienced by elementary schools in their first year of SR2S. The solutions presented include options that have been used by SR2S teams locally, nationally, and internationally.

Case 1

A city elementary school is located on a busy 5-lane road that leads into the city center. While the speed limit is 35 mph, traffic usually travels at higher speeds. A pedestrian overpass bridge is directly in front of the school, making it difficult for the SR2S team to convince the local road authority that flashing school zone lights and speed reduction was needed. The problems noted by the SR2S team included: high traffic speed and volume; students crossing the road rather than using the pedestrian bridge; parents lining up and stopping on the 5-lane road while waiting to turn onto the street beside the school.

Education objective:

Class teaching/learning activities were identified to teach students pedestrian skills through real-life simulations of street crossing settings.

Encouragement approach:

Middle and high school students considered "cool" by elementary students (e.g. athletes, musicians, artists) will put on a series of assemblies to promote use of the pedestrian bridge and walking to school. These students will also visit the school at the beginning of the year for a few days to kick off "Bridge Daze" and award small prizes to students using the bridge.

A Walking School Bus program to encourage students to walk in groups with adult supervision rather than arrive/depart by automobile was piloted.

Enforcement strategy:

Law enforcement officers will patrol the school zone and ticket all speeders for a certain number of days at the start and end of the school day. Officers will try to return on a regular basis (e.g. once a month) and ticket.

Engineering treatment:

City officials helped arrange for a nearby parking lot to be used as a parent drop-off and pick-up area, to decrease the traffic congestion and move parent traffic off the main roadway; signs and markings to direct parent traffic were also provided by the city.

continued on next page

Appendix E

5 Es to Success: Educate, Encourage, Engineer, Enforce and Evaluate, cont.

Evaluation Method:

To evaluate whether parent and students attitudes toward walking to school changed during the first year of the SR2S initiative, parent and student surveys were distributed at the beginning and end of the year.

Case 2

A suburban elementary school is located on a four-lane road with a posted traffic speed limit of 25 mph in the school zone. A crossing guard is posted in front of the school and a marked crosswalk is designated. The school is adjacent to the district campus complex that includes athletic fields and the district's middle and high school.

The problems noted by the SR2S team included: parent drop-off and pick-up traffic congestion on the four-lane road and in the school parking lot at the start and end of the school day; no sidewalks in many nearby neighborhoods; lack of safe crossing on nearby high-volume and high-speed roadways.

Education objective:

The physical education teacher began a school-wide physical activity initiative that includes regular lunch-time activity. The purpose of this program is to show kids how much fun it is to be physically active and to teach students the skills and attitudes needed for a physically active lifestyle, including walking to school.

Encouragement approach:

An incentive contest was started at the school and classrooms began to record the number of students walking or biking to school. The class with the most walkers is recognized each month. To give students who must ride the bus or be driven a chance to participate, students can walk a route around the school building in the morning and qualify as a walker.

Enforcement strategy:

Parents decided to start an "enforcement" patrol which will use parent volunteers to serve as the "pace car" for 15 minutes at the beginning and end of the school day. The pace car will drive at the posted speed limit, to "enforce" the limit.

Engineering treatment:

A 5-year plan to install sidewalks along routes used by students is also underway. One segment of three blocks was recently completed.

Evaluation Method:

To evaluate whether more students are walking and bicycling to school, the school used an in-class tally of walking and biking for five consecutive days at the beginning of the SR2S initiative. They collected the same information a year later and compared the results.

Case 3

A rural elementary school is located on a two-lane state highway at the outskirts of a small town. Many students are bussed to the school; however, a number of students live in town and close enough to walk. A trail system cuts through town and many residents are committed to developing a pedestrian-friendly culture and infrastructure.

The problems noted by the SR2S team included: no way for children who live nearby but across the state highway to walk or bike to school; the need to link the trail system to the school property so students in town could use it to walk or bike to school; serious traffic congestion on school property at the beginning and end of the school day; concern among parents that walking or biking to school is unsafe because of the threat of crime.

Education objective:

Law enforcement officers helped the SR2S team collect information on the incidence of crimes against children in their town. The research showed a very low incidence of crime toward children and the findings were used in the school newsletter and local newspaper to inform parents. Parents were also informed that physical inactivity was a very serious threat to the health of their children and quality of life and that walking or biking to school instilled life-long habits that contribute to good health.

continued on next page

Appendix E

5 Es to Success: Educate, Encourage, Engineer, Enforce and Evaluate, cont.

Encouragement approach:

Parents formed walking school bus teams in three neighborhoods and parent volunteers took turns leading the walking school bus, which picked up other walkers along the route. One walking school bus will use a nearby trail system as part of their route to school.

Enforcement strategy:

Team members volunteer at the beginning and end of the school day to serve as "valets" and assist with a smooth drop-off and pick-up process. At times, parents hand out flyers to remind parents of drop-off and pick-up procedures. An incentive program is being developed to reward students and parents who follow the safety rules.

Engineering treatment:

A 3-5 year plan to install a traffic light and marked crosswalks, as well as hire a crossing guard, is being developed to address crossing the 2-lane highway in front of the school. Team members are researching funding sources for this physical improvement.

Evaluation Method:

The SR2S team will collect evaluation data by observing the school drop-off area for a period of five days to count how many parents utilize the valet service and thereby decrease the danger to students who exit from a car that is not beside a curb. They will collect this information at two different points in time during the school year. They will compare the number of parents complying with the drop-off rules to see if the encouragement intervention (flyers and incentives to parents) was effective. Parents also felt that by counting parents who comply and don't comply they were providing a type of enforcement that might be motivational.

MORE IDEAS FROM THE 5 ES[1]

Education

For Students:

- Crossing the street safely, choosing where to walk, bicycle safety, personal safety
- Health education

For Parents:

- Pedestrian and bicycle safety tips
- Safe driving behaviors near school
- School drop-off and pick-up procedures

For Neighbors:

- Pedestrian and bicycle safety tips
- Safe driving behaviors near school
- Importance of sidewalk snow removal

Photo courtesy Governor's Council on Physical Fitness

Encouragement

- Walk to School Day
- Walking school bus—adults leading groups of students to and from school
- Mileage clubs—incentives to accumulate steps
- Contests—class or individual contests to acknowledge walkers and bikers

continued on next page

[1] This list of options was compiled from the Education, Encouragement, Enforcement and Engineering Modules developed by the Pedestrian and Bicycle Information Center for the National SR2S Instructor Course.

Appendix E

5 Es to Success: Educate, Encourage, Engineer, Enforce and Evaluate, cont.

- Park and walk—adults park a distance from school and walk with students
- Mapping routes—students draw maps of the walk to school, including pictures of what they see along the way

Photo courtesy Governor's Council on Physical Fitness

Enforcement

- Community enforcement
- Neighborhood patrols
- Increased police presence on interim basis
- Speed trailers—provide awareness, reduce speeds, enhance enforcement
- Active speed monitors—regulatory devices, may be solar powered
- Traffic complaint hotline
- Photo enforcement—moveable or permanent units
- Pedestrian stings
- Progressive ticketing—educate, warn, ticket

Photo courtesy Governor's Council on Physical Fitness

Engineering

Engineering for Safe Routes to School requires the specialized knowledge of an engineer or design expert who understands the hazards associated with safe walking and bicycling. Consultants who can provide this knowledge come from a variety of fields, such as landscape architecture, transportation, specialized engineering firms, and trails and greenway collaborations.

There are also excellent national resources which may be helpful. A sampling of these resources includes:

- PED SAFE, the next generation of the Pedestrian Facilities User Guide; visit www.walkinginfo.org.
- AASHTO Guide for the Development of Bicycle Facilities; available at www.transportation.org.
- AASHTO Guide for the Planning, Design, and Operation of Pedestrian Facilities; available at www.transportation.org.

The following examples are provided to help SR2S teams become familiar with engineering solutions to safety hazards. They are by no means comprehensive!

School Zone

Traffic conditions at schools during drop-off and pick-up times are often chaotic and at times very dangerous.

- School zone speed limit signs
- Portable speed message signs (trailers or mounted on poles)
- School crosswalk signs
- Advance warning signs
- Curb signs (i.e. parking restrictions)
- In-street signs (placed daily or permanent)
- Pavement markings
- Curb painting
- Drop-off and pick-up areas

Photo courtesy Governor's Council on Physical Fitness

Appendix E

5 Es to Success: Educate, Encourage, Engineer, Enforce and Evaluate, cont.

During drop-off and pick-up times, education, engineering, enforcement and encouragement strategies work together to improve safety for students, staff, and automobile occupants.[2] The following options are often used in combination with each other. If a school traffic safety plan exists, these measures can be incorporated into the plan as appropriate.

- Separate drop-off and pick-up vehicles from pedestrian and bicycle traffic, e.g. provide access for buses and other vehicles that is separate from pedestrian and bicycle traffic
- Valets
- Off-site queuing lanes
- Temporary street closures and one-way streets
- Regular reminders to parents regarding the rules of the drop-off and pick-up process (e.g. hand out flyers at curb)
- Traffic and safety education for school families
- Carpooling
- Encouraging parents and students to walk and bicycle to school
- Enforcement

Sidewalks, Trails, Bicycle Lanes

►Sidewalks and Trails[3,4]

- Sidewalk buffers
- Sidewalk repairs
- Sidewalk clearing (brush, obstacles, etc.)
- Street lighting
- On-street bike lanes
- Pathways
- Connectivity
- Pedestrian and bicycle bridges

Street Crossings

►Shorten the crossing distance

- Curb extensions (“bump outs”)
- Crossing islands
- Road “diet” (decrease number and/or width of lanes)
- Crosswalk stripes
- Lights in/just above pavement
- Yield lines and markings set back
- Advance stop/yield lines
- Parking restrictions
- Traffic signals and stop signs (many types of signalized crossings are available; consult with a SR2S engineering/nonmotorized design expert)

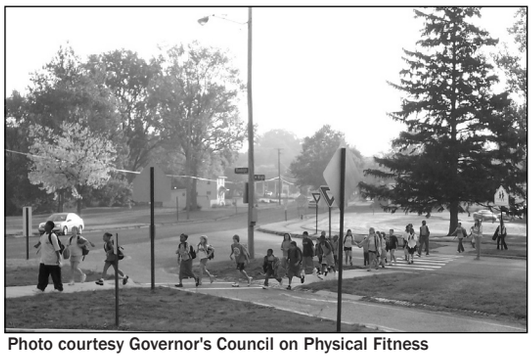

Photo courtesy Governor's Council on Physical Fitness

Speed and Traffic Volume

- Street narrowing
- Speed humps
- Raised pedestrian walkways (across streets/roads and in parking lots)
- Speed sensitive signal
- Curb radius reduction

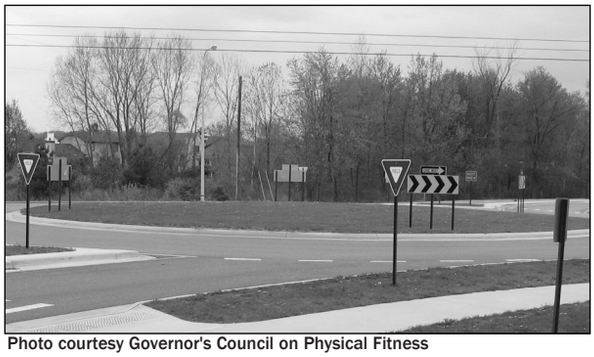

Photo courtesy Governor's Council on Physical Fitness

[2] Drop-off and pick-up solutions were compiled by the Pedestrian and Bicycle Information Center for the Center’s National SR2S Instructor Training Course.

[3] A study conducted as part of the California SR2S program found that providing sidewalks is one of the most effective engineering measures to encourage kids to walk to school. Pedestrian and Bicycle Information Center National SR2S Instructor Training Course.

[4] A study conducted for the Federal Highway Administration found that having sidewalks or walkways on both sides of the street corresponds to an 88% reduction in “pedestrian walking along roadway” crashes, compared to roadways with no sidewalks. Pedestrian and Bicycle Information Center National SR2S Instructor Training Course.

NOTES