

Washington Elementary After School Bike Education Pilot Program 1.4

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Authorship and Acknowledgements

Dr. John Landosky (jlantosky@littlerock.org) and Coreen Frasier (fursecl@sbcglobal.net) have created this bicycle education program for Little Rock Public Schools borrowing materials compiled and synthesized by Dr. Willa Williams (stemwilla@gmail.com) for the North Little Rock Fit 2 School program. Dr. Williams’ program was successfully taught in Boone Park Elementary and Crestwood Elementary in the 2012-2013 academic year by Brad Kilberry, Sarah Richardson, and Anthony Stover. Bernadette Rhodes headed North Little Rock’s Fit 2 School program, oversaw the development of Dr. Williams’ bike education program, and has been instrumental in providing its reference materials.

Why Bike Education in Little Rock Public Schools (LRPS) Now?

- 1) **Public Safety – Novel Facilities:** In April 2015, the Little Rock Board of Directors passed a Complete Streets Ordinance #21,029 requiring new and resurfaced roads to accommodate all modes of transportation, including bicycles (Little Rock Clerk, 2015). Students will now have access to bike facilities (i.e. trails, lanes, and sharrows) that they may have never encountered before. Students who may not have been comfortable riding on the road before may now be emboldened to do so. While this is our goal, if these riders are unfamiliar with how to ride in concurrence with vehicular traffic in general or how to use this new infrastructure in particular, we have created a dangerous situation. New road riders need to be educated in the practice of how to ride on the street with and without bike facilities.
- 2) **Public Health:** In September 2015, Arkansas earned the dubious distinction of becoming the most obese state in the nation, with an adult obesity rate of 35.9% (Levi et al. 2015). While all physical education addresses this public health crisis on some level, teaching students how to safely ride a bicycle has the potential to instill a lifelong bicycle transportation habit. Research shows as bicycles are used more for daily transportation, overall physical activity increases and rates of obesity and diabetes decreases (e.g. Pucher et al. 2010). This is not surprising given that, according to the Center for Disease Control, just 30 minutes of moderate to intense exercise per day (the time required for many bike commutes) can have significant health benefits (Shalala, 1999).
- 3) **Public Safety – Pre-Driver Education:** Bicycles should obey the same traffic laws as motor vehicles do. Therefore learning safe riding habits can be an introduction to responsible driving. This is not a trivial benefit. Motor vehicle accidents are the leading cause of death for U.S. teenagers (CDC, 2013). Drivers between 16-19 years old are three times more likely to be in a fatal car accident than 20+ year olds (IIHS, 2013). By introducing bike education in Little Rock elementary schools, we can foster habitual riding that will provide students years of traffic law adherence before they are ever behind the wheel of a motor vehicle.
- 4) **Social Justice - Equal Access to Bike Education:** Given the public safety and health benefits mentioned above, equal access to bicycle education may be considered an ethical responsibility. Not all parents know how to ride a bicycle. Bicycle education can't be done in the home if parents don't know how to ride a bike. Hispanic Americans are 1.8 times less likely and African Americans are 2.4 times less likely to know how to ride a bike than Caucasians (YouGov, 2013).
- 5) **Social Justice - Equal Access to Bikes:** Not all families can afford to buy their children bikes. Recycle Bikes for Kids is a program unique to Little Rock that provides bicycles to students free of charge. Through the LRPS bike education program we propose, we intend to partner with Recycle Bikes for Kids to act as a conduit for getting their bikes to the kids who need them. African Americans are 1.4 times less likely and Hispanic Americans are 3.1 times less likely to own a bike than Caucasians (YouGov, 2013).
- 6) **Public Safety and Social Justice:** African American males under the age of 18 are more likely than any other demographic to be involved in a bicycle accident in Central Arkansas and 2.9 times more likely than Caucasian males under 18 (Metroplan, 2015).

Timeline

Month	Event	Action Steps
12/14/16	Washington Team Meeting	Convene the Washington Elementary Bike Education Team: Linda Young, Katherine Snyder, Coreen Frasier, Crystal Young-Haskins, Ron Croson, and John Landosky
by 1/4	Individual Tasks	<ul style="list-style-type: none"> • Revise curriculum (Landosky) • Program budget (Young) • Cognitive domain survey questions (Snyder) • Identify Staff Coordinator for program (Snyder) • Academic tie-ins to other disciplines (Snyder)
1/4, 9am	Washington Team Meeting	Convene Washington Team and discuss program progress to date. Karen Worsham, Terrie Evans, and Laquita Ensminger were added to the team on 1/4/17
by 1/11	Landosky Tasks	<ul style="list-style-type: none"> • Affective domain survey questions • Curriculum revisions based on 1/4/17 meeting • SMART Cycling course information • List of bike community volunteers
by 1/15	Individual Tasks	<ul style="list-style-type: none"> • Identify Team Leader (Washington Elementary) • Identify bike helmet source (Young) • Complete survey development (Snyder)
by 1/20	Individual Tasks	<ul style="list-style-type: none"> • Distribute pre-program survey to students and parents at Washington and an equivalent non-participating elementary school (Snyder) • Schedule class dates based on Team Leader availability and academic schedule (Team Leader) • Communicate class dates to Staff Coordinator to allow him/her to schedule staff and volunteers (Team Leader)
by 1/27	Individual Tasks	<ul style="list-style-type: none"> • Collect pre-program survey from students and parents (Snyder) • Train the Team Leader and as many staff and volunteers as possible (Frasier) • Schedule staff and volunteers for class dates (Staff Coordinator) • Revise syllabus dates to reflect schedule (Team Leader)
by 2/3	Bicycle Count	Determine from surveys how many bikes and helmets are needed for program and communicate to Young-Haskins (Team Leader) ¹

¹ According to this schedule, we determine how many helmets needed by 2/3 but distribute them on 2/6. Either we'd have to have a helmet source from which we could get helmets immediately or plan to distribute helmets to all program participants.

2/4 9am-4pm	SMART Cycling Class	Landosky, Team Leader, Katherine Snyder, Karen Worsham, Terrie Evans, Laquita Ensminger, and as many staff members and volunteers as possible will attend SMART Cycling Class at Central High National Historic Site Visitors Center
by 2/6	Individual Tasks	<ul style="list-style-type: none"> • Procure 40 LRPD water bottles (Young-Haskins) • Determine date of Bike to School Event (4/1?) (Young-Haskins and Croson) • Distribute syllabus to participating students and their parents (Snyder)
February	Program Begins	<ul style="list-style-type: none"> • Begin program as scheduled and obtain any materials necessary for classes (see syllabus below for activities) (Team Leader)
February	Nat'l African American History Month http://www.africanamericanhistorymonth.gov/	During National African American History Month, celebrate by reading about Major Taylor http://www.majortaylorassociation.org/ . Special guests could include local cyclists to show their racing bicycles, especially members of the Major Taylor Cycling Club (Snyder)
by Sess. #7	Bikes for all students	Procure enough bikes so that all students in the program own their own working bike (Young-Haskings)
March	March 3, National Reading Day http://www.nea.org/giants/886.htm	Coordinate volunteer cyclists to ride to schools on National Reading Day to read bicycle themed books such as "The Bear and the Bicycle" with the kids and to teach a bicycle safety lesson (Team Leader)
April	Bike to School Event	Capstone event will celebrate the skills learned in this program (Croson and Team Leader).
4/5/17	BFCC Presentation	Brief presentation of Washington Elementary program to BFCC (Team Leader)
April	Post-Program Survey	Survey student knowledge and parent and students affects at Washington and an equivalent non-participating school (Snyder).
by May 1 st	Data entry	Enter pre- and post-program survey data into Excel and give to Landosky (Team Leader)
May	Promote Program	Promote LRPS Bike Education Program in media promotion of Metroplan's Ozone Action Days/Ditch the Keys (Young)
by June 7 th	Data Analysis and Reporting	Analyze data to determine pilot program efficacy. Report results to Washington Team and BFCC (Landosky)
by July 5 th	Program future	Meet with LRPS decision-makers to discuss plans for program in 2017-2018 school year (Landosky)

LRPS Bike Education Syllabus Spring 2017

(Dates: based on Monday-Wednesday schedule; can easily be changed to Tuesday-Thursday. Cross-referenced with LRSD academic calendar. April currently unscheduled. We could push program into April to provide schedule flexibility as needed by school or program coordinator)

Session	Date	Activity	Materials	Page #
1	2/6	Pretest Helmet Fit	Traffic Safety Test Helmets	8 (SRTS 14)
2	2/8	Where do I belong?	Intersection tarp (optional: signs/cards "car", "walker", "bicycle", etc.)	9 (SRTS 19)
3	2/13	Signals Traffic Signs	Traffic Sign and Signal Handouts	10 (SRTS 39)
4	2/15	Riding on the Road	Mock bicycles, intersection/railroad tracks tarp (optional: traffic signs)	21 (SRTS 22)
5	2/20	Walking Crossing the Street	Tape, Crosswalk Signs	22 (SRTS 45-49)
6	2/22	Bike Parts	Bicycle (optional: bicycle stand, bike parts worksheet)	25 (SRTS 31)
7	2/27	ABC Quick Fit Check	Bicycle(s), (optional: bike pump)	26 (SRTS 36, BSY 6)
8	3/1	Fixing a Flat	Bicycle wheel(s), tire levers, bike pump, (optional: used tubes, patch kits)	27 (SRTS 32) Williams handout
9	3/6	Gears	Bicycles	(SRTS 41-42)
10	3/8	Mounting Starting/Stopping Snail Race	Bicycles	(SRTS 38, BSY 123 8-9) (SRTS 42)
11	3/13	Straight Line Riding Obstacles Chaos Box	Bicycles	(BSY 123) (BSY 123 8) (SRTS 42, BSY 123 18)
12	3/15	Intersections Driveways	Bicycles	(SRTS 45-49) (SRTS 51-57)
	3/20- 3/24	[Spring Break]		
13	3/27	Figure 8 Scanning	Bicycles	(BSY 123 11) (BSY 123 10)
14	3/29	Railroad Tracks Rock Dodge Snail Race	Bicycles	(SRTS 43) (SRTS 44) (BSY 123 18)
15	4/1 (Sat.)	BIKE TO SCHOOL EVENT Post Test Celebration	T-shirts Blinky Lights SRTS Backpacks/Water Bottles Post Test Certificates	(SRTS 71-72) (BSY 123 7) (LAB Bike Month Guide)

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Session One - Helmet Fit

Time Needed: 15 minutes

Materials: Bicycle helmet(s)

SRTS Curriculum Reference Page: 14



Introduction: Helmets protect your head from the impact of crashes. It is essential to put them on properly. Helmets must be snug so they don't slide off the head. Protecting the front of the head is most important when using bicycle helmets. During crashes, bicyclists generally go forward and hit the front of their head. So, it is essential that the helmet is always strapped, and that it cover the forehead and cannot be easily pushed back on the head.

When to Replace Your Helmet? Never wear a helmet that has been crashed. Bicycle helmets are designed to be crashed **ONLY ONCE**. If your helmet shows signs of having been crushed, cracked or damaged in any way, the integrity of the helmet may have been compromised, and it needs replacing. Scratches on the plastic coating might be okay, but if the Styrofoam has any cracks, the helmet will not absorb an impact and your brain will not be protected.

Lesson

1. Ask students who uses helmets. Have students call out answers.
 - a. **SPORTS:** biking, boarding, roller blading, football, baseball, hockey, rock climbing, bungee jumping, skiing, luging, motorcycle and car racing, caving, and some boxing.
 - b. **PROFESSIONS:** construction, jet pilot, astronaut, motorcycle/bike police officers, and firefighters.
2. Use the 2 finger fit rule (Go step by step with students and ensure they do it individually. Demonstrate each step and point out students that are doing it right as examples. Move on to next step as students understand current step.)
 - a. Place the helmet level on the head, use 2 fingers to move the helmet and the forehead skin should move (not too tight, not too loose)
 - b. Place 2 fingers above the eyebrows, this should be the placement of the helmet rim
 - c. Make 2 peace signs with 2 fingers on 2 hands. Place the fingers over your ears; this is where the ear straps should be fitted.
 - d. Finally, close the chin strap (a helmet is not "on" unless the chin strap is closed). With your mouth open wide, you should only be able to fit 2 fingers between your chin and the chin strap.

Note: Transmission of lice from helmets can be a concern. One idea is to require each student to have a separate bag that they store their helmet in and tie or rubber band it shut. In this case students should write their name on masking tape and attach it to the bag. After the bike safety class is complete, helmets should be stored in an air-tight bag for two weeks in a dark location. This will kill all lice and their eggs. Lice spray that can be purchased at most drug stores can also be used to disinfect helmets.

Session Two – Where Do I Belong? / Who is Traffic?

Time Needed: 15 minutes

Materials: Mock bicycle intersection tarp (optional: signs/cards “car”, “walker”, “bicycle”, etc.)

SRTS Curriculum Reference Page: 19

Introduction: Bicyclists must act like drivers when riding on the road. Riding with traffic/like an automobile includes:

- Riding in same direction as traffic
- Following all traffic signs, lights, right-of-way rules, and regulations
- Using hand signals
- Use proper equipment including lights at night

Reasons:

- PREDICTABILITY! Motorists do not expect to see traffic coming in the opposite direction or on the sidewalk.
- Wrong-way riding results in nearly one fourth of all car/bike crashes.
- Wrong-way riders cannot see signs and signals.
- Wrong-way riders create the danger of a head-on collision with cyclists riding on the right, or pedestrians.

Pedestrians are not considered operators of vehicles under the law, and generally, the pedestrian has the right-of-way, or right to go without yielding. However a walker is very vulnerable and must be careful when faced with difficult situations. Walking principles include:

- Walk on the sidewalk or path, or walk in the opposite direction as traffic.
- Follow all traffic signs and lights.
- Stop and look left/right/left at all stop signs, cross with the green light at intersections.
- Try to find marked crossings/crosswalks. Be very careful when you can't.
- Wear bright clothing to help you be seen, especially at night.

Lesson

1. Use the Mock bicycle intersection tarp to find ask where these individual belong on the road
 - a. Assign students to be a motorist, bicyclist, walker, jogger, horseback rider, etc.
 - b. Ask the student to stand and face the direction where they should be in traffic
 - c. Ask all other assigned students to do the same
 - d. Ask the class if everyone is placed correctly in the road, move if there is agreement
 - e. Have the traffic start moving, is there chaos, does it work? If it does why, if it does not? Why not? Is it safe? Who gets hurt? Are all roads built the same?
2. Make sure the students eventually move into the right place they should be in traffic. Let them know they must obey traffic laws even if they are a pedestrian and especially if they are on a bicycle

Session Three – Signs and Signals

Time Needed: 15-45 minutes

Materials: Traffic Sign and Signal Handouts

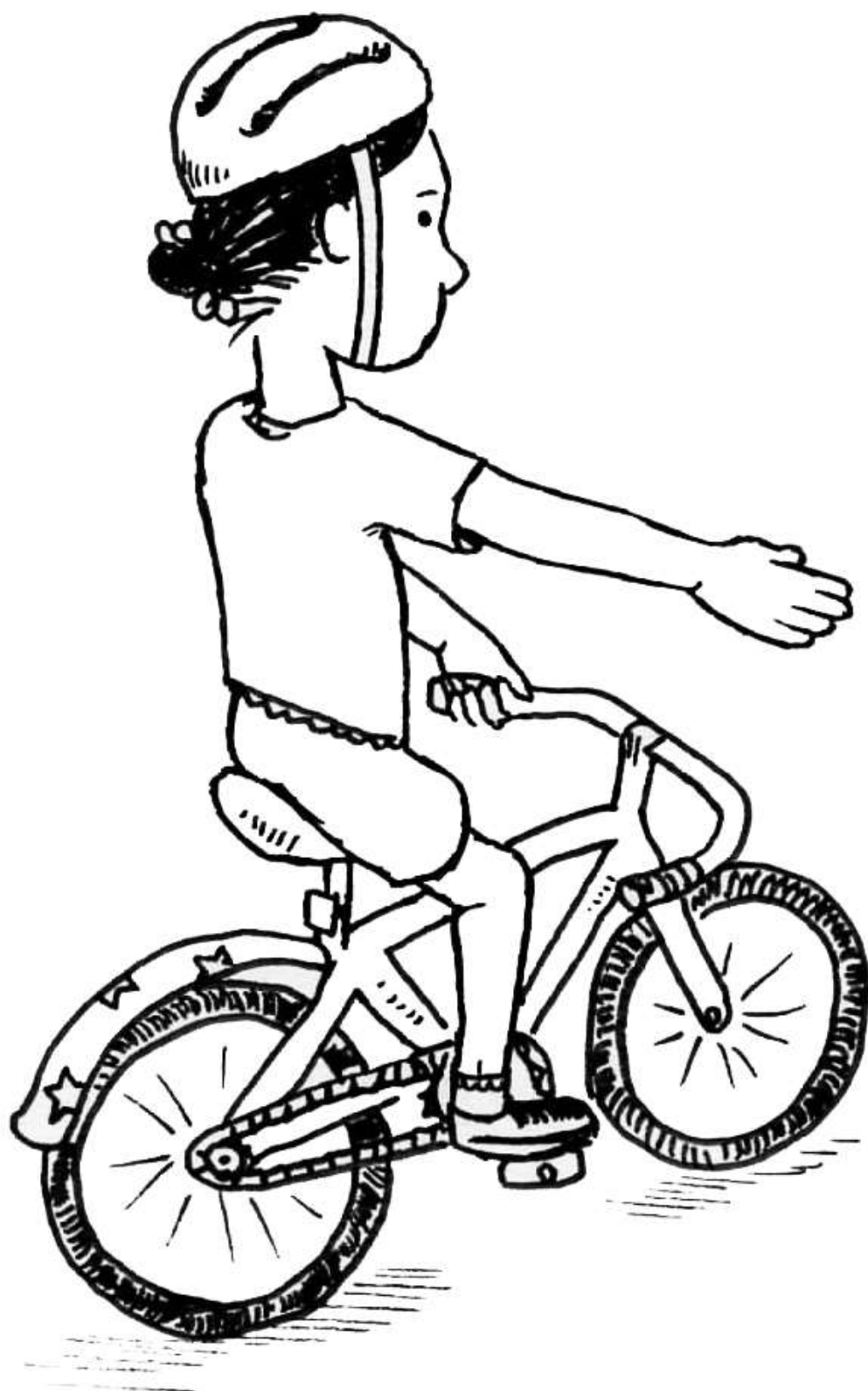
SRTS Curriculum Reference Page: 39 Hand Signals, (BikePed Safety and Spanish.pdf)

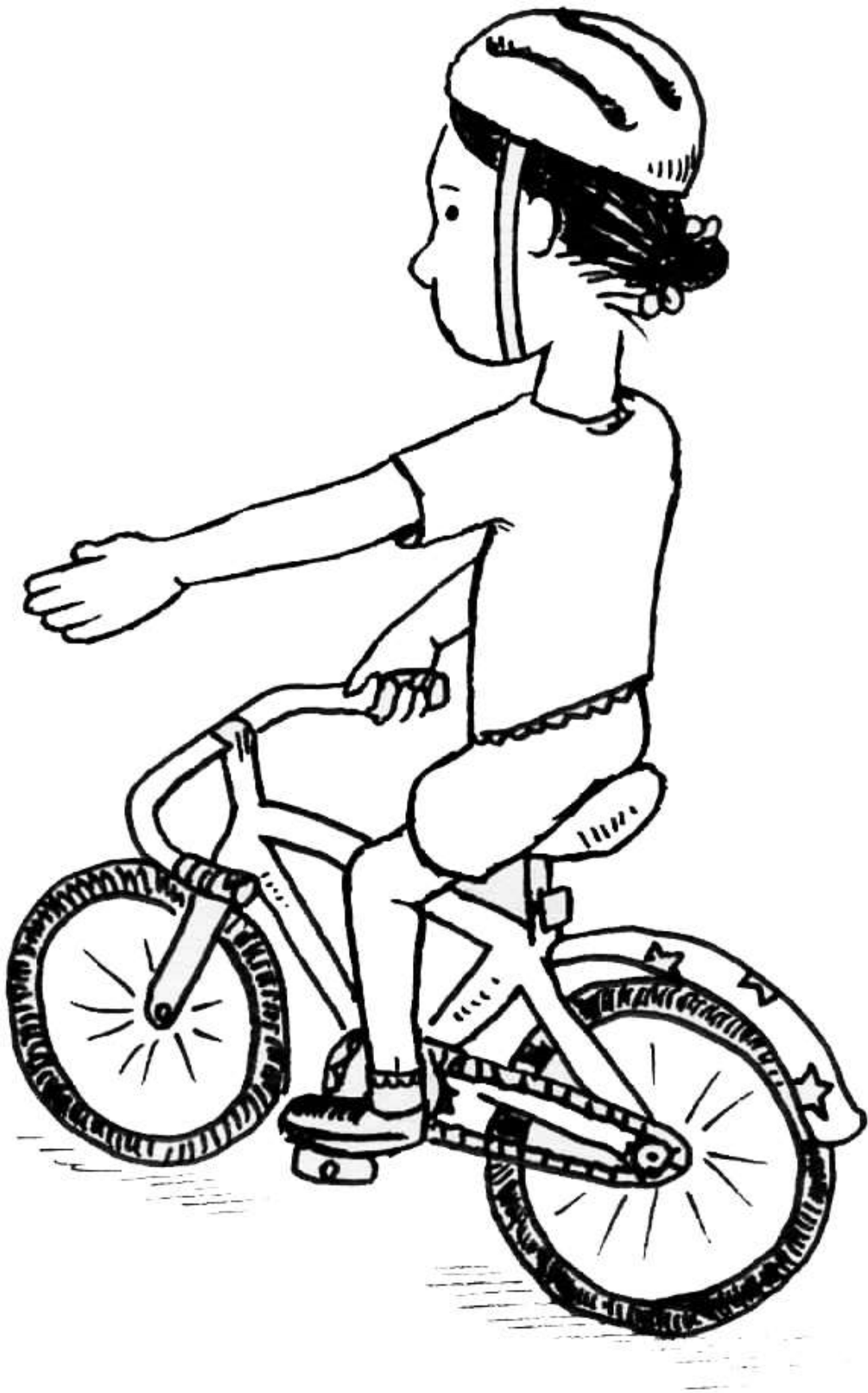


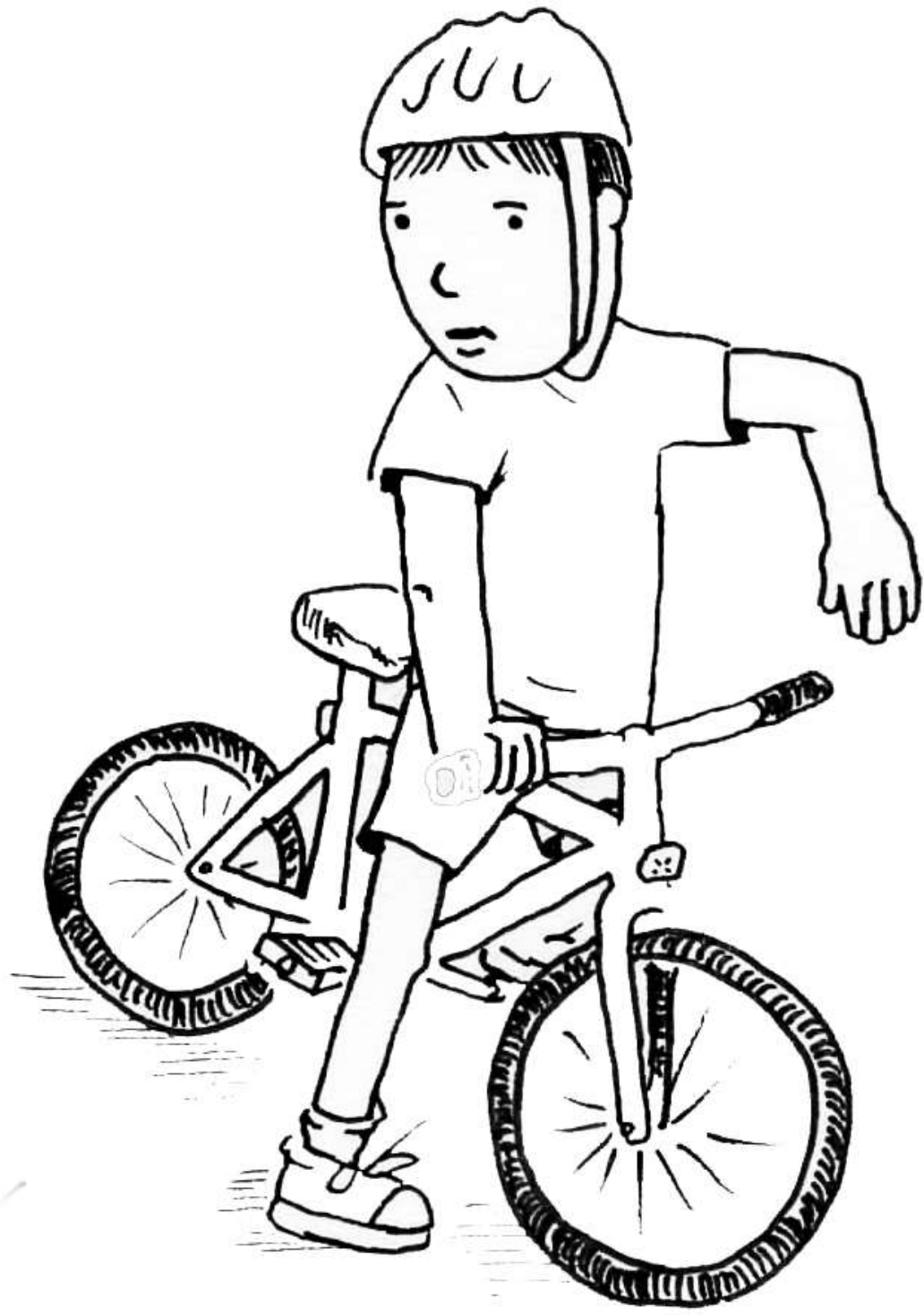
Introduction: While looking back, a cyclist should try to make eye contact with a motorist approaching from behind. Once engaging the driver, use a hand signal to clearly indicate the desire to merge with traffic.

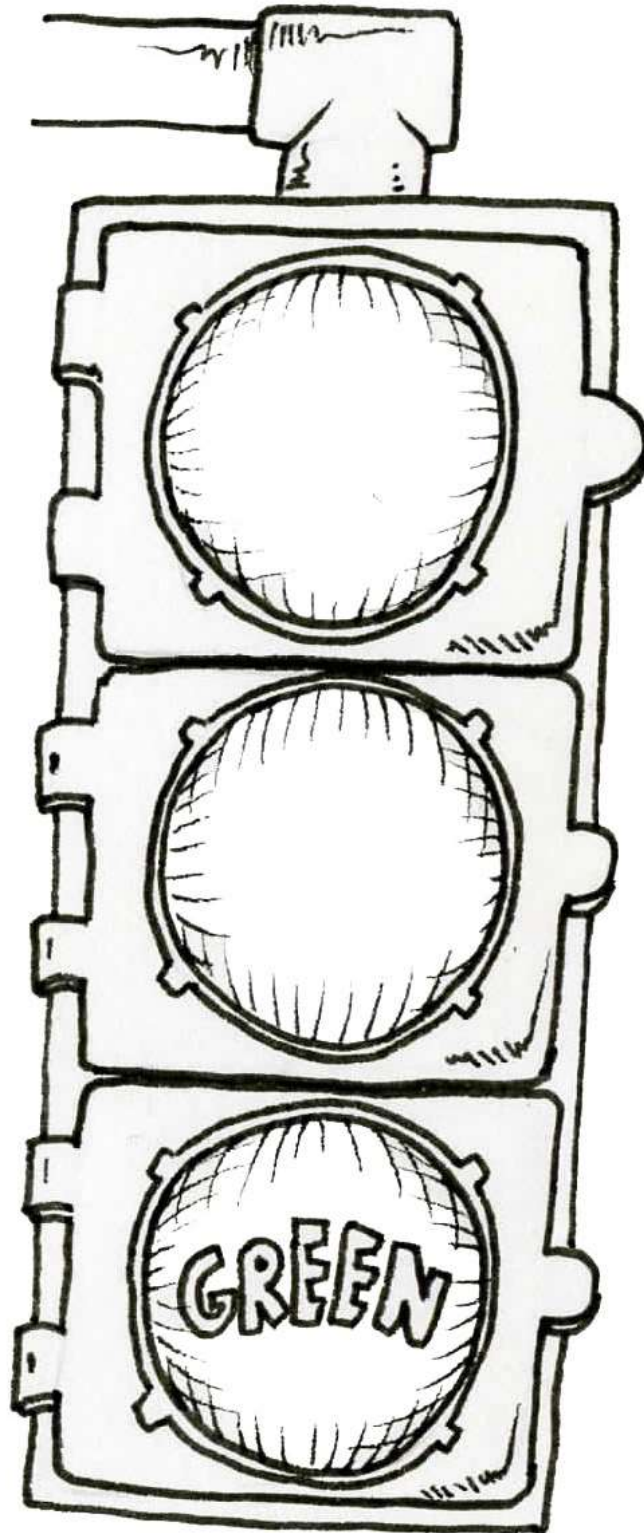
Lesson

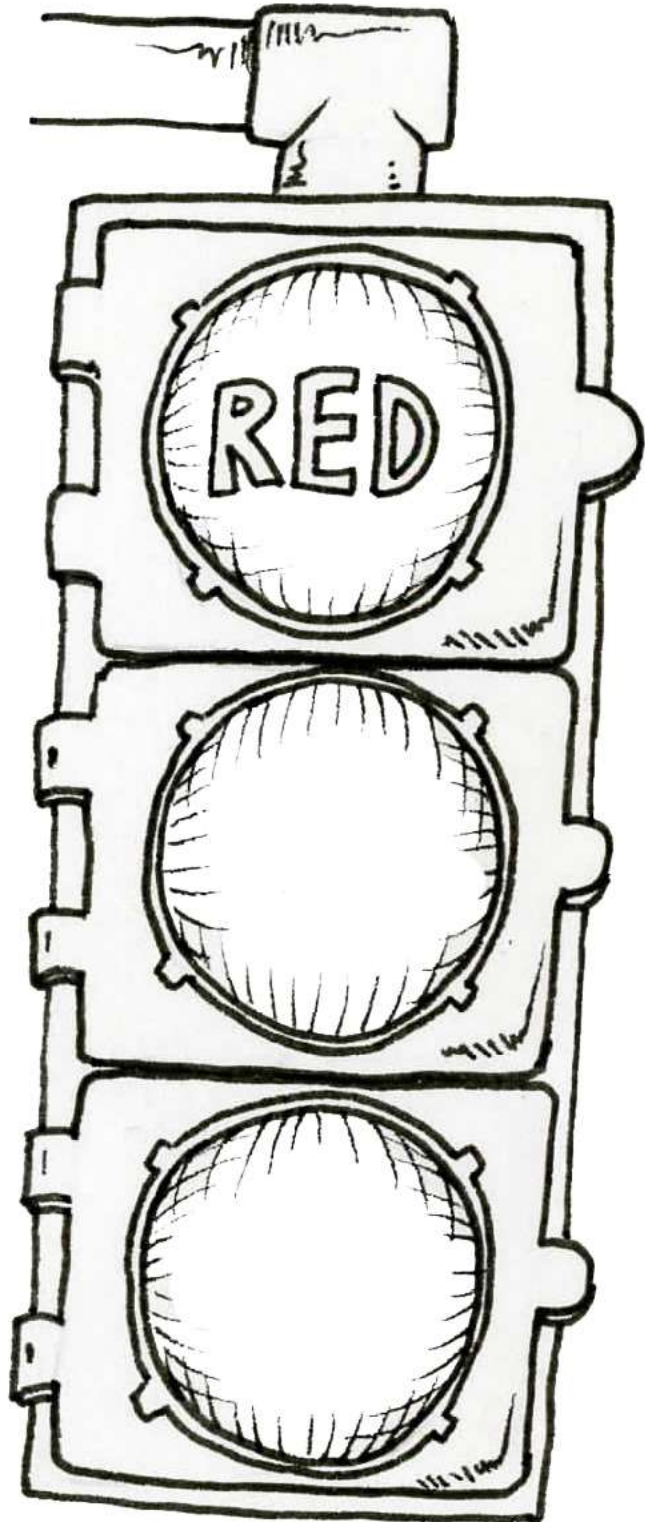
1. *Hand Signal Simon Says* - Play a game of Simon Says using hand signals for right/left turns, and stop signals
2. *Signs, Signs, Everywhere Signs* - Inform students that you will hold up different traffic signs, and for each one, they will do a different exercise. Explain the exercises will address agility, such as shuffling quickly back and forth. Demonstrate each exercise while showing the signs. Direct students to practice them with you.
 - a. **Stop Sign:** Freeze!
 - b. **Green Light:** With feet shoulder-width apart, run in place very fast.
 - c. **Yellow Light:** Shuffle forward slowly.
 - d. **Right Turn Signal:** Shuffle to the right.
 - e. **Left Turn Signal:** Shuffle to the left.
 - f. **Stop Sign:** Freeze!
3. *Signs and Signals* - Count off students by 3's. Explain that 1's are Bike Riders, 2's are Bikes and 3's are Traffic Signs.
 - a. Distribute the traffic signs to the 3's and tell them to scatter throughout the space onto the black lines on the gym floor (or anywhere in the space if your gym does not have lines).
 - b. Direct the Bike Riders and Bikes to form pairs. Explain that the Bike Riders will steer the Bikes, reacting to the sign appropriately at each encounter:
 - c. **Yield Sign:** slow down and look to make sure that no one is coming toward you. If they are, yield, which means let them pass before you go.
 - d. **Stop Sign:** you must stop and look both ways before going. Use hand signals!
 - e. **One Way Sign:** you must go in the direction of the arrow on the sign.
 - f. **Green Traffic Light:** you may go, but be careful of others! Use hand signals!
 - g. **Do Not Enter Sign:** you must stop, turn around and go the other way.
 - h. Rotate roles after about 3 minutes.
 - i. Add skill practice by having the Bikes dribble basketballs while going through the course. Demonstrate dribbling and instruct students that when they get to a stop sign, they need to stop and hold the ball as they look both ways.

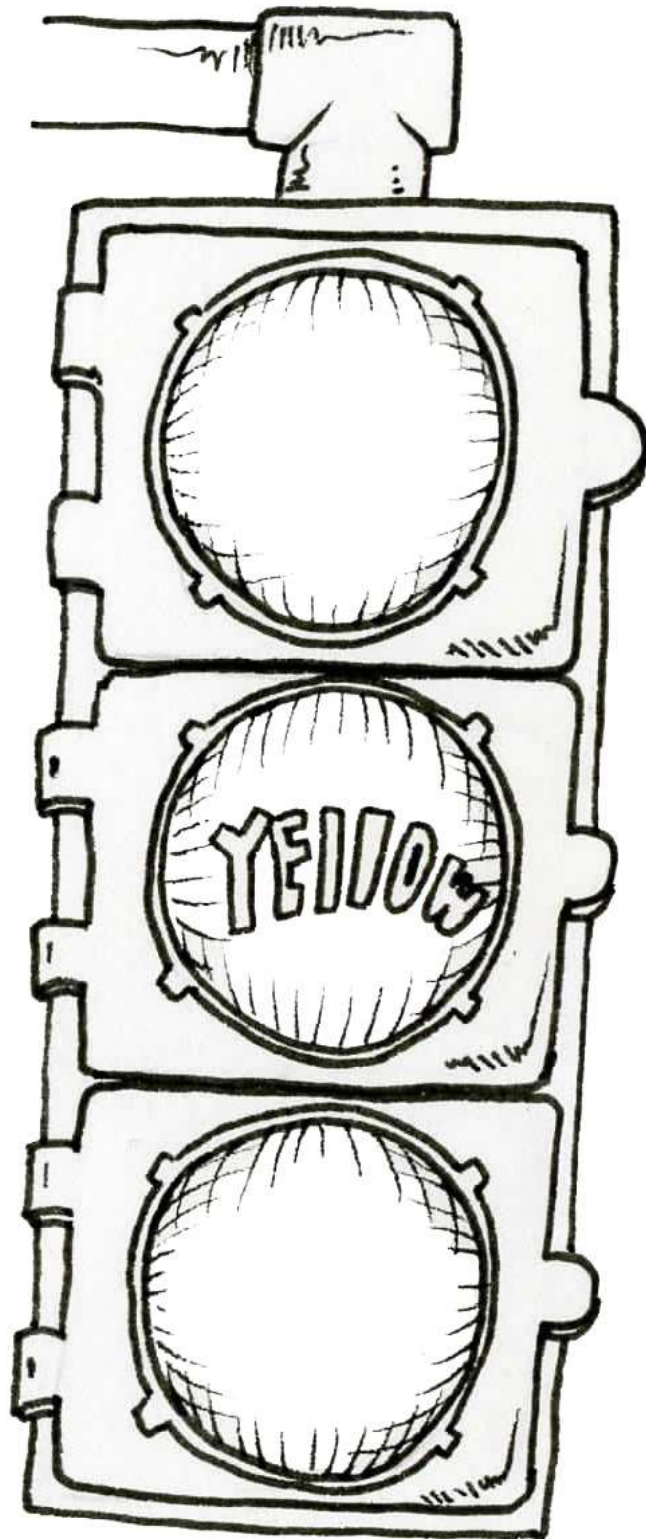


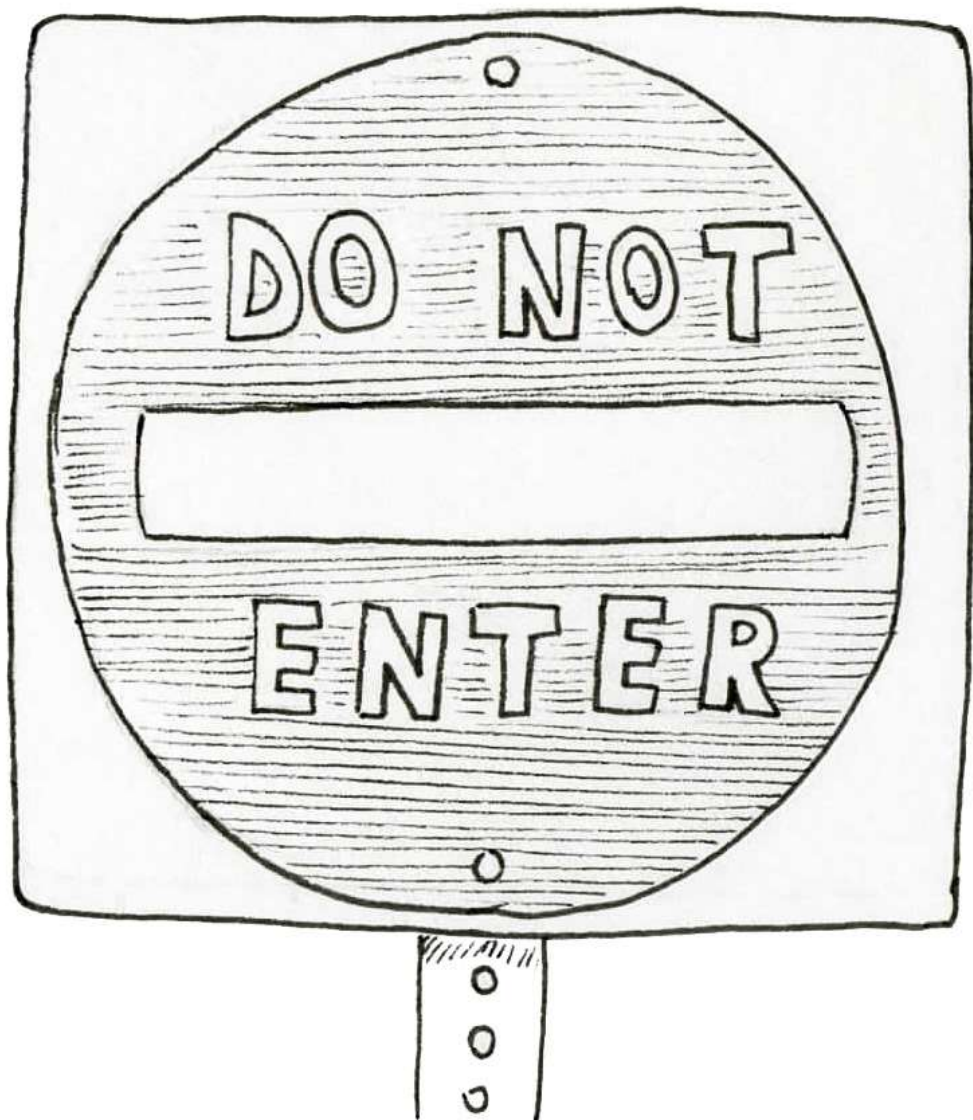


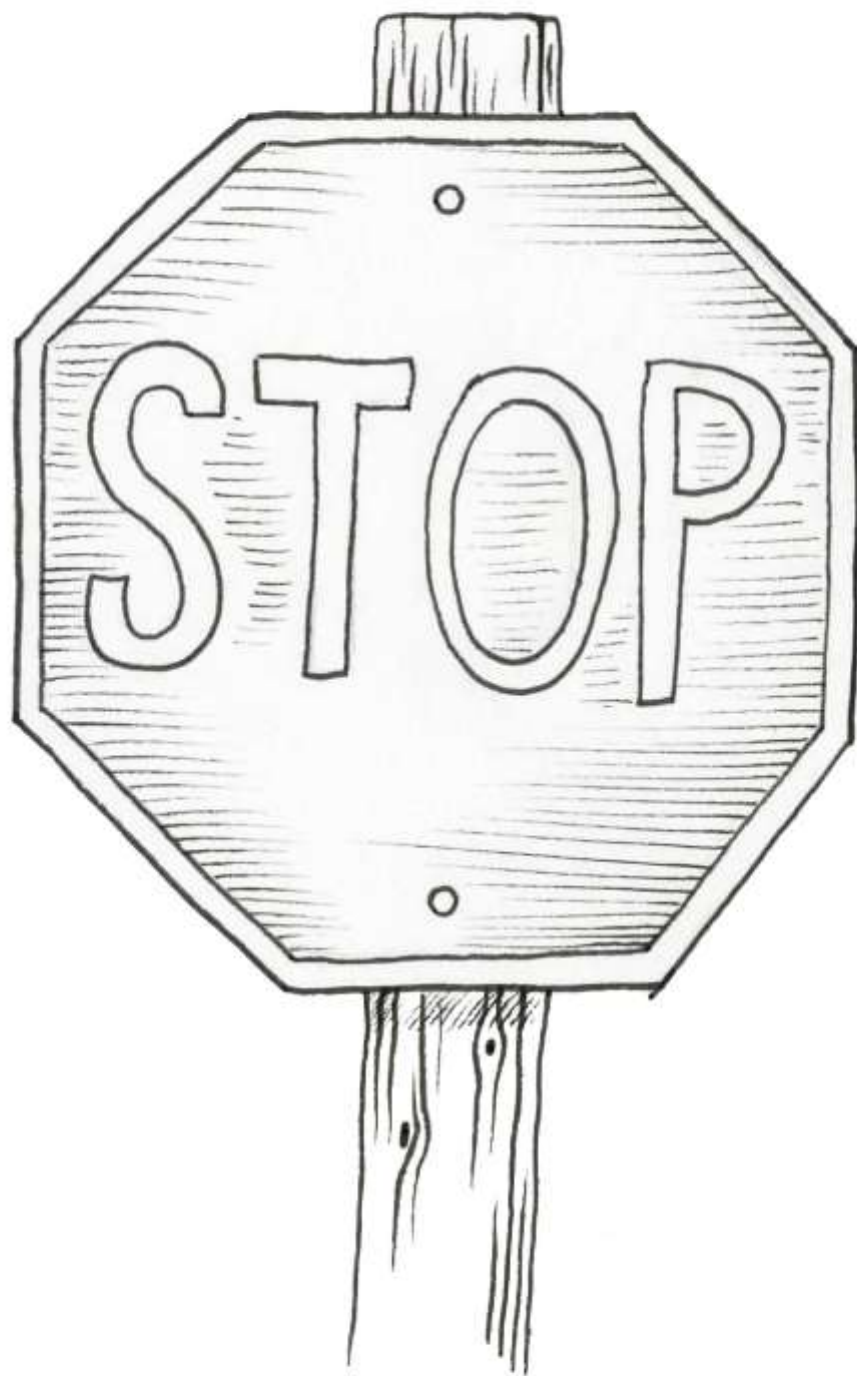


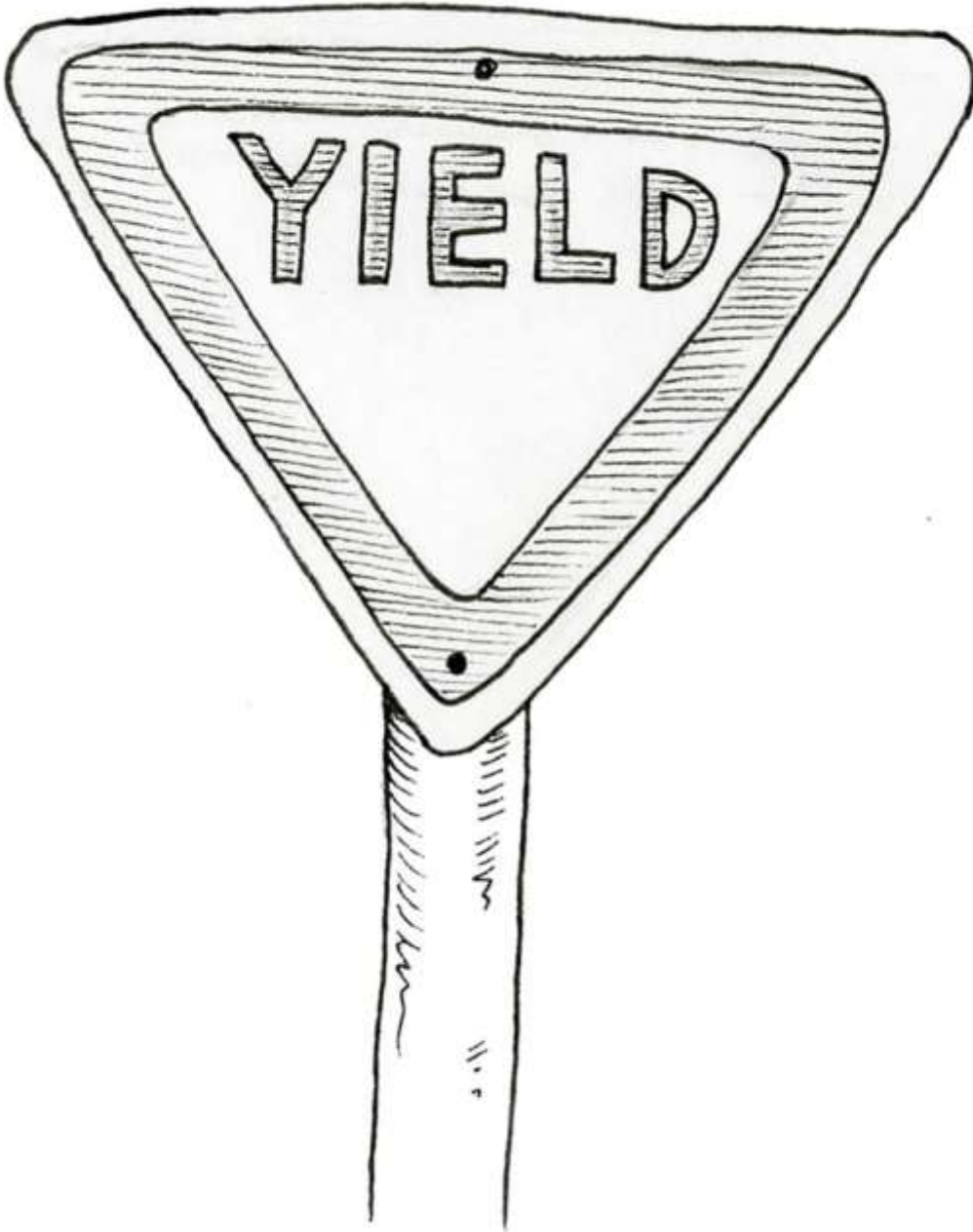














Session Four – Riding on the Road

Time Needed: 15-45 minutes

Materials: Mock bicycles, Mock bicycle intersection/railroad tracks tarp (optional: traffic signs)

SRTS Curriculum Reference Page: 22

Introduction: Bicyclists must ride on the right, but what happens when they travel through intersections? If we demonstrate intersections on the board, we can label proper turning positions: 1 (inside), 2 (middle), 3 (outside or right) and the direction of traffic flow: demonstrating each turn, starting from Position 3 and moving to the proper turn position.

- *Intersection 1 – Straight* - The bicyclist normally rides in position 3, about 3 feet from the curb. And 4 feet from parked vehicles to avoid car doors (the door zone.) Bicyclists can move into position 2 on a narrow street.
- *Intersection 2 - Right turn* - The bicyclist normally rides in position 3 and remains in position 3 when turning right through an intersection. Look for pedestrians crossing the street.
- *Intersection 3 - Left turn* - The bicyclist is riding in Position 3 but must move to Position 1 when turning left. Before moving to Position 1, cyclists must look back and check for traffic, signal left, merge to Position 1, and then signal again to indicate a left turn. Cyclists must then yield to oncoming traffic and to pedestrians before turning. Complete the turn in Position 3. (See lessons 4 and 6 for detailed information on turns.) A common mistake is to turn left from Position 3. Turning left from Position 3 is very dangerous because the cyclist is required to cut in the front of cars approaching from behind.

Lesson

1. Set up the intersection tarp (have optional traffic signs). Tell the students that the tarp represents a 4 way intersection with crosswalks for pedestrians.
 - a. Have students one at a time use the mock bicycle to ride to the intersection and choose to turn right, left, or proceed straight ahead.
 - b. Students ride to the right and scan behind them before the intersection, then signal, look left, look right, then look left again, then proceed to their destination.
2. For the railroad crossing tarp, tell the students that they can cross tracks 2 different ways.
 - a. Cross tracks perpendicular or at a “T” so as to not get their tires between the tracks. Before they get to the tracks, students must scan, signal, then move into the lane to cross at a “T”, then scan, signal, and move back to the right side of the lane.
 - b. Dismount from the bicycle, cross the tracks, mount the bicycle, scan for traffic, proceed riding

Session Five – Walking and Crossing the Street

Time Needed: 15 minutes

Materials: Tape, Crosswalk Signs

SRTS Curriculum Reference Page: 45-49, (BikePed Safety and Spanish.pdf)

Introduction: The top causes for youth pedestrian injuries are:

- Crossing away from an intersection
- Improperly crossing a roadway or intersection
- Darting into traffic / unseen
- Walking along roadways

Note: Many pedestrian crashes do not occur in the first lane, but the second or third lane of traffic at which they cross.

Lesson

1. Using Technology to Cross the Street (Students will practice following crosswalk signals.)
 - a. Point out that people don't want to get stuck in the crosswalk when the signal turns to a solid "DON'T WALK"! signal
 - b. Divide students into 2 groups; line up one behind the other at one end of gym.
 - c. Instruct students that when you hold up the WALK signal, the first group will run down to the cones at the end of the gym and back as many times as possible.
 - d. Before holding up the DON'T WALK signal, begin counting down 15 seconds, at which point they must get back to the starting line.
 - e. Challenge students to get back and forth as many times as possible before the DON'T WALK sign is held up.
 - f. Repeat with the second group.
2. Stop, Look, and Listen
 - a. If the floor is not already marked with intersecting lines, use tape to mark "sidewalks". Ask students to choose a place to stand on a line.
 - b. Explain that the lines on the floor represent sidewalks, and that you, as the teacher, are the crossing guard. You will be calling out commands. The object of the game is to follow all the guidelines carefully. Warn students that if you catch them breaking pedestrian safety guidelines, you will give them a fine (seven jumping jacks on the side of the room). You will also give them fines for running into other pedestrians. Explain each command:
 - c. **"Green Light!"** –jog around the gym while staying on the lines
 - d. **"Yellow Light!"** –walk around the gym while staying on the lines.
 - e. **"Red Light!"** –freeze where you are.
 - f. **"Crosswalk!"** –stop, look left, right, left and then show that you are listening by holding your hand up to your ear.
 - g. **"Driver!"** –stop and make eye contact with someone else in the room.





Session Six – Bike Parts

Time Needed: 15 minutes

Materials: Bicycle (optional: bicycle stand, bike parts worksheet)

SRTS Curriculum Reference Page: 31, Bike Parts Worksheet in Appendix

Introduction: The bike frame is the section of your bike that is fused together, the body of the bike.

Lesson - Distribute the Bike Parts Worksheet. Students should start the sheet on their own. Allow students to look at and touch the real bikes and bike parts. After a few minutes, allow students to work together. Finally, the instructor can drill the class by quickly pointing to bike parts and have the class call out the answer.



Frame

- A. Top tube
- B. Head tube
- C. Seat tube
- D. Down tube
- E. Fork
- F. Seat stays
- G. Chain stays
- H. Dropouts
- I. Headset

Drivetrain

- J. Bottom Bracket
- K. Pedal
- L. Cranks
- M. Chainrings
- N. Front derailleur
- O. Chain
- P. Cassette
- Q. Rear derailleur
- R. Shifters and cables

Other components

- S. Wheel - hub, spokes, rim, tire, rim strip, tube, valve
- T. Saddle
- U. Seat post
- V. Handlebar
- W. Handlebar stem
- X. Brake lever and cables
- Y. Brakes

Session Seven – ABC Quick Fit Check

Time Needed: 15-30 minutes

Materials: Bicycle(s), (optional: bike pump)

SRTS Curriculum Reference Page: 36

Introduction: An ABC Quick Check is a quick procedure to see if the bicycle is in good operating condition. Bicyclists do this each time we ride. As part of the bike check, we will look over the basic parts of the bicycle. A tune-up is a bigger maintenance job that helps keep your bike in good long-term condition. For youth, complete an ABC Quick Fit Check. You should check the fit of the bike to ensure the bike fits for safety and comfort. Check 2 areas for proper bicycle fit:

- *Stand over the bicycle* – the student should be able to stand over the bicycle with one to three inches over the top tube (depending on type of bike). For bicycles with downward slanting top tubes, think of the standover height as if the top tube were level.
- *Seat Height* – While sitting on the bicycle, students should be able to place their tip-toes (or balls of feet for less skilled riders) on the ground. If the feet are flat on the ground, the seat is too low.
- *Note:* if students are just learning to ride a bicycle, it is okay to lower the seat height so the students can place their feet firmly on the ground while seated on the saddle.

Lesson

- **Air:** Find the inflation rating on the sidewall of the tire and inflate to the pressure indicated on front and rear tires.
- **Brakes:**
 - There should be at least a thumb's width of distance between the brake levers and the handlebars when squeezing the levers.
 - Engage brakes, the brakes must stop the wheels from turning.
 - Brake pads should be aligned with the rim braking surface and not touch the tire as it spins. Also check the pads for wear; most brake pads have an indicator line. Make sure the pads have not worn below this point.
- **Chain / Cranks:**
 - Pick up the rear wheel and rotate the pedals.
 - Students should make sure that the chain is moving smoothly and is not too rusty
 - Test the cranks by pushing and pulling on both crank arms for looseness/movement
- **Quick Releases:** seat, wheels, and brakes:
 - Students should check the quick releases of the wheels to make sure they are locked down tight and in the closed position
- **Fit:** Must be done only once per bike but ABC Quick Check must be done every time you get ready to ride
- **Check:** Check the general condition of the bicycle. Ride it.

Session Eight – Fixing a Flat

Time Needed: 30-60 minutes

Materials: Bicycle wheel(s), tire levers, bike pump, (optional: used tubes, patch kits)

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Introduction: We are now going to fix flat tires. It is impossible to fix a flat on the road if you don't carry tools and patching equipment with you. Try to carry some basic tools in case of emergency (show them small tool bag), especially when biking long distances from home. Review potential road (surface) hazards that cause flats. Glass and nails are very common. Snakebite flats are common. A snakebite flat often happens when a tire hits a curb, or other edge, and pinches the tube between the tire and rim, resulting in two small holes. Demonstrate, or have student demonstrate, repairing a flat. (If a student demonstrates, stress that they should talk loudly).

Lesson

1. Use tire irons to take one side of the tire off of the rim. It is not necessary to take the whole tire off the rim.
2. Pull the tube out from between the tire and rim, start with the side opposite the air valve.
3. Remove the tube and pull out the air valve.
4. Find the hole. Finding the hole is usually easy. Pump up the tube and glide your hand along tube, feeling for air rushing out. If you can't feel it, run the tube past your face, listen and feel for the air. Mark the hole with a marker or chalk.
5. Sand the hole and apply glue over the hole. Apply enough glue so the entire surface of the patch will come into contact with glue.
6. Wait for the glue to dry because the glue gets stickier as it dries. Five minutes is recommended, but blowing on the glue will help it dry it faster.
7. Apply patch over entire hole and press it on firmly.
8. Check the patch by pumping up the tire and listening for sounds. If it holds, release the air (not all of the way) and replace tube on rim.
9. To replace the tube on the rim, first put the valve stem into the valve hole. Start from the valve hole and push the tube in between the rim and tire, making sure it is not twisted.
10. Put the tire back on the rim (over the tube) and pump it up. Sometimes tires are difficult to mount on the rim. If so, start at one end of the wheel and work the wire bead up on both sides of the wheel towards the top. Hold the wheel at your waist and move away from your body, moving the slack up the tire and eventually rolling the tire onto the top of the rim.
11. Put the wheel back onto the bike.

Sessions Nine – Fifteen: See Included Materials

Sessions 9-15 are more activity-based rather than classroom-based. The syllabus identifies where in the included materials descriptions for these activities can be found. Prior to the class, review the descriptions. Consider the number of students you have and their skill levels to determine how many groups to break the class into, how many additional adults are required, and what preparation other adult volunteers will need.