

In-school Bicycle Education

Wayside Elementary Case Study



We've often heard the phrase "It's like riding a bike—you never forget it!" But in order to remember something, you first have to learn it. Are our children learning everything they should about bike riding?

Without a doubt, bicycling is a prevalent activity among children. The National Sporting Goods Association estimates that 14.2 million children ages 7-17 ride bicycles in the United States, and overall, its 2009 Sports Participation Survey found that a staggering 38.1 million children rode a bike more than once in the last year. Parents tend to feel most comfortable when their children can ride on trails and pathways where they are somewhat insulated from traffic, but in order to explore their communities and gain independence, children eventually need to ride on the street. As a result, children on bicycles are sharing the roads with automobile traffic. While drivers' training is widely available to those traveling these roads in cars and trucks, bicycle drivers' education training is not. Just as pushing the pedals to accelerate or slow down is only a tiny part of operating a motor vehicle, pushing bicycle pedals is only a small part of cycling. Safe cycling also requires skill, technique, and an awareness of the rules of the road.

Youth bicycle education can instill these skills and knowledge. It can also improve traffic safety on two levels. First, it develops cyclists who are more aware of how to safely travel today. Second, it creates better and safer automobile drivers for tomorrow. Children who receive training as cyclists and learn to identify signs and negotiate traffic at an early age will have a better footing when they begin learning to drive later in life.

Improving Bicycle Safety Skills

A lack of bicycle safety skills among children is apparent; in 2008, 93 children ages 15 and younger were killed in bicycle-related accidents, and 13,000 were injured. It is clear that across the nation, children comprise a higher share of total bike crashes.



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A good, comprehensive bicycle education program should have several components; focusing on helmet fit and usage, bicycle safety checks, local traffic rules and laws and how they affect bicyclists, as well as learning and practicing safe skills for effective cycling. Currently, the most common form of bicycle education available to school-age children is a bike safety rodeo taking place after school or on the weekend. Bike rodeos are usually bike safety clinics featuring bike safety inspections, quick tune-ups, and a short safety lecture about the rules of the road. While bike rodeos are undoubtedly a good start to bicycle education, they do not go far enough. During these brief one day events, there is often not much time available for the teaching and practicing of on-bike skills.

Bicycle Education as part of Physical Education Classes

A comprehensive, on-bike program can be an ideal method for teaching bicycle skills and safety, but finding time to conduct the program can be a challenge. With the busy schedules of today's families, holding classes after school and on the weekends may not lead to high levels of participation. To reach the greatest amount of children, bicycle education needs to be incorporated into the regular school day. Fitting bicycle education within the curriculum of physical education (PE) classes is a cost efficient way to teach bike safety to a large cross section of area youth. It also allows PE teachers to provide a tremendous service to the community. As children learn bicycle safety and skills in school, they can pass their education on to friends and family,

helping to contribute to safer local roadways throughout the area.

Bicycle education is a great addition to an effective and innovative physical education program. Ideally, it would be a part of the curriculum at all New Jersey schools. This is a goal that could be reached with the help of committed physical education instructors who are

below: Students were split into small groups to practice riding. (bottom) Students participated in a bike parts race to test their knowledge of basic bicycle components

dedicated to providing students with the activity they need to be healthy while also teaching skills that may save their lives.

Getting Started

Few fail to see the merit of in-school driver's education programs for young motorists, but asserting the need for bicycle training is a much different story. Skeptics claim that schools' limited resources present a lack of time, equipment, and interest for such programs. The experiences of nearly three hundred third and fourth grade students in Ocean Township, New Jersey can suggest otherwise.





With limited class time and with a fleet of bicycles half the size of the actual class, two physical education instructors at Wayside Elementary School were able to make safe, savvy cyclists out of each student, some of whom had never been on a bike before. Their success story demonstrates both the feasibility of a bicycle education program and its transformative results.

The NJBIKESChOOL Program

NJBIKESChOOL is an on-bike, on-road bicycle safety pilot program targeted to New Jersey youth in grades 4-6. As part of the program a fleet of bikes, equipment and educational materials are transported to schools, summer camps and/or school after care programs. The curriculum is taught by certified bicycle education instructors. This comprehensive program teaches children to understand themselves, their bicycle, and their surroundings, creating knowledgeable cyclists who are confident to ride to school and elsewhere.

Through grant funding from the New Jersey Department of Transportation and the New Jersey Division of Highway Traffic Safety, staff from the Alan M. Voorhees Transportation Center (VTC) at Rutgers University was able to offer students at summer

recreation camps throughout New Jersey the chance to complete the NJ BIKESChOOL bicycle education program during the summer of 2009. Classes were taught at East Hanover (Morris County), Pemberton (Burlington County) and the City of Camden. Following the successful completion of the summer pilot courses, the logical next step was to modify the existing NJ BikeSchool program so that it could be introduced as an in-class bicycle education program in New Jersey schools. To deliver the in-school program, physical education teachers from throughout the state received training through a seminar conducted by Bike New York and sponsored by the New Jersey Association for Health, Physical Education, Recreation, and Dance (NJAPERD). The teachers were trained through Bike New York's Bicycle Driver's Education program (see sidebar). Two of the several teachers from Ocean Township that attended a training held in the Spring of 2009 as part of a teacher in-service day, Crystal Jahn and Michael Attanasio, knew that their school, Wayside Elementary, would be well suited to implementing the program and were eager to get started.

Learning to Ride

Before the program could begin, Jahn and Attanasio knew that they would need to establish a baseline skill set for their students. Several children at Wayside school had never ridden a bicycle prior to the start of the program, and a handful had been on a bike so few times in their life that they still lacked basic riding abilities. With volunteer assistance from the Ocean Girls Varsity tennis team, two "Learn to Ride" classes were held

after school on September 17th and 18th, 2009 to help these children get started. Over forty students participated. By the end of the session, most of them could successfully balance and ride a bicycle, many for the first time.

"The Learn to Ride classes were great," said Ms. Jahn. "Seeing kids who had struggled to ride a two-wheeler start pedaling away was thrilling. The kids were so proud of themselves and their classmates."

Following the two sessions, the bicycles were left at Wayside for use in the PE program until the middle of October. VTC also provided the PE teachers with pre- and post-test documents as well as cyclist behavior surveys so they could better understand the program's impact.

Program Curriculum

The Wayside PE program covered most aspects of the full NJBIKESChOOL curriculum, involving education both on and off the bicycle. Bicycle safety topics included the ABC Quick Check (air; brakes; chain, cranks, and cassette; quick releases; and final check), bike adjustments, helmet fitting, and traffic sign identification. On-bike drills covered stops and starts, steering, and signaling. Students were also familiarized with the basic parts of a bicycle and their functions. Of all the lessons that were covered, Jahn reported in a follow-up interview that the children were most readily able to recall the ABC Quick Check, describing it as a helpful training tool, particularly because of the simple acronym.

Overcoming Challenges

Jahn and Attanasio were faced with several challenges in delivering an in-school bicycle education program. One issue was the availability of equipment. The teachers oversaw a class of 45 students. With an available fleet of 24 bicycles, only half of the students could be on-bike at the same time. To cope with this issue, the teachers organized a time-efficient plan for equipment sharing. According to Jahn, the students were matched with partners roughly their same height. With partners of similar height sharing bicycles, time spent adjusting the seats was minimal, allowing students to spend more time riding. After the first lesson on helmet importance and fit, instructors had each student pick up a helmet and work with his or her partner to make sure it fit correctly. Having the students fit each other before each additional lesson was a quick and easy reminder on proper helmet use.

Another issue was class time. At Wayside, regularly scheduled physical education classes meet for 40 minute periods twice weekly. With their limited time, the teachers worked together to make the most of each minute. To ensure that the students got the most amount of time on bicycles as possible, the instructors brought all of the bikes and equipment outside each morning and made sure that their lessons were set up before school even began. They also worked to make sure that the program was flexible, saving bike safety lesson plans that could be completed

indoors for any days that inclement weather forced the class inside. This happened on two occasions during the three week program.

Results for Wayside

As part of the program, all of Jahn and Attanasio's students completed a pre-test before classes started and a post-test at the end of the program. The results of these tests allowed staff from VTC to assess some of the impacts of the program. Results from the pre and post-tests suggest that, in general, the program at Wayside Elementary increased the students' understanding of bicycle safety measures. The overall improvement between the pre-test and post-test was 11%, which is on par with the average improvement of other groups who have participated in the NJBIKESChOOL program (11.4%). The improvement is a particular achievement for Wayside Elementary, considering the program was able to maintain

a similar level of effectiveness despite having far more students than the other local programs as well as significantly more time constraints. Because of careful planning on the part of Wayside's Phys Ed instructors, they were able to teach their large class without compromising individualized attention.

By the end of the program, over three quarters of the Wayside students (76.3%) demonstrated basic aptitude of bicycle safety skills. The most significant improvement was in students' understanding of the "safest way to stop a bike," probably because of it being an explicit technique that was given its own lesson; over a quarter (28.5%) showed improvement in this area. There were also significant increases regarding knowledge of traffic signaling. Of the two questions that tested students on hand signals,

below: NJBIKESChOOL provided a fleet of youth bicycles for Wayside students



roughly one fifth more answered correctly (22.3% and 18.3% respectively) in the post-test.

Areas for Improvement

Less significant improvements were seen in areas of bike helmet safety. Of the three questions testing helmet knowledge, two yielded increases of less than 5%, while the third was only slightly better with a 6.6% increase. It should be noted though, that a high proportion of students already understood the safety implications of helmets (no fewer than 84% of students were aware of helmet rules during the pre-test). However, another informational survey showed that despite having this knowledge, few students put it into practice by actually wearing a helmet. Further observational studies are needed to determine if the helmet lessons taught to the students resulted in increased use.

Little improvement was seen regarding knowledge of road rules. Two questions (“at a stop sign, bicyclists should...look left, right and left again before riding out” and “when riding on the street, bicyclists should...ride on the right, in the same direction as motor vehicles”) both yielded improvements of less than 5%, and unlike the bike helmet issue, fewer children exhibited prior knowledge of the issue at hand (particularly “when riding on the street...” for which only 28.6% had preliminary knowledge). In contrast, the students that participated in the NJBIKESChOOL program outside of school PE classes had better scores on these questions. It is hypothesized that since a short on-road group ride was included as part of the NJBIKESChOOL classes conducted outside school hours that the lack of this type of ride as part of the PE classes may have contributed to the lower scores. It

appears that while skill drills in fields and parking lots help, they may not translate into on-road behavior as well as practicing on actual streets.

A troubling finding is that by the program’s end, there was still a sizeable perception among the students that it is safe to ride a bicycle with more people than it was designed for. Only 62% of the students correctly answered that it was not ok to ride with someone on the bike’s rear or handlebars in the post test. This shows that although a majority of the students understand the practice to be wrong, about two fifths had still not gotten the message. It will be important to make clear in future programs that under no circumstances is stunt riding of this sort a safe practice.

A Cycling Success

Despite evidence of a few lessons not hitting home, the 2009 bicycle education program at Wayside School was viewed by most as a huge success. All of Jahn and Attanasio’s hard work and planning paid off as the program was well received by their students, many of whom showed tremendous improvement in their bicycling abilities over the course of the program. When

asked how she thought the children responded to the classes, Ms. Jahn replied, “They loved it!” She said that the children seemed to respond to the safety lessons, taking what they learned seriously and helping to ensure that everyone’s helmets were properly fit before each lesson.

The students weren’t the only ones pleased with the bicycle education program. Ms. Jahn said that “parents of the children who could not ride a bicycle were thrilled and exhilarated by how well their child progressed over the three-week unit.” Jahn added “It was a great experience and was very well received by all the school employees, administration, community members, students, and parents.” Following the success of their first in-school bicycling education unit, Both Jahn and Attanasio were enthusiastic about running a similar program again in the future.

The success of the Wayside bicycle education program in the face of tight schedules and limited resources demonstrates that with some good planning and the proper motivation, in-school bicycle education programs can work. In a matter of weeks, nearly three hundred students became knowledgeable cyclists and, most importantly, each child that completed the Wayside bicycle education program left with a life skill that can contribute to a safer, more active, and healthier lifestyle.

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