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The SHIFT Bike

A bicycle has two in-line, narrow wheels that provide a small footprint of vertical support between the rider and the ground. Staying upright on a bicycle when it is in full motion is mainly accomplished by the gyroscopic action of the two spinning wheels. When a bike is barely moving, the rider's ability to balance it becomes critical to keeping the bike and rider from falling sideways to the ground.

Learning to ride a two-wheeler hasn't changed much until now. I learned, 50 odd years ago, by using the Bronx, NY, crash-or-learn teaching method. Friends, when parents weren't around, placed you on a bike at the top of a hilly street and held your bike for a few seconds until it picked up speed. By the time you reached the bottom of the hill, you knew how to balance a moving bike or at least knew how to pick a crash site. Starting without a hill took some trial and error.

Most children today first grow comfortable on a bike that has training wheels. Then, someone runs alongside of the bike with the training wheels removed until the rider conquers balancing, peddling, stopping and eventually starting on their own.

A new bike design that just won top honors at this year's International Bicycle Design Competition in Taiwan could soon provide a new approach to learning how to ride a two-wheeler. The SHIFT Bike (Fig. 1) was designed by Purdue University Industrial

Design Professor Scott Shim in collaboration with past graduate Ryan Lightbody and current senior Matt Grossman.

At first glance, the SHIFT looks like a cool tricycle. Its third wheel, in a sense, is a built-in training wheel that shifts positions as the bike picks up speed. Once the bike is in motion, the section where the two rear wheels touch the ground move closer together, transferring the balancing act from the bike to the rider. As the bike slows down, the opening of these two rear wheels once again expands, making it much easier for the new rider to learn how to safely stop the bike (Fig. 2).

I asked Shim to name the greatest challenge his team had to overcome to develop their SHIFT Bike design.

"The biggest challenge was to think differently about existing bi-

cycles. We combined the user experience with the functions to come up with an alternative solution to enhance the bicycle learning experience. It was tough because the overall form of bicycles has not changed since it was introduced to the general public. And most of us have a difficult time to see such products outside the box. You really have to



Illustrations courtesy of Purdue University Department of Industrial Design.

Fig. 1—The SHIFT bike in its "stopped" position.

observe what's around you these days."

The SHIFT bike is not yet in production. However a number of bicycle manufacturers have already contacted Shim indicating that they might be interested in adding SHIFT to their current bicycle product lines.

Recalling the Facts

1. Describe how the SHIFT bike's rear wheels shift position as the bike slows down or increases in speed.

2. Describe the type of person who would benefit from the bike described in this column. ©

Alan Pierce, Ed.D., CSIT, is a technology education consultant, technical writer, and public speaker on technology issues.

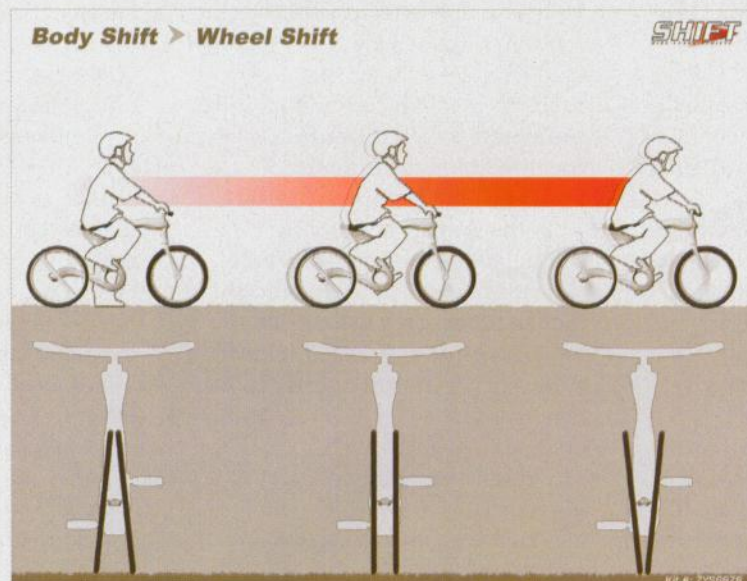


Fig. 2—At rest or slow speeds, the wheels provide a larger stance for better balance. As the child builds forward momentum, weight is redistributed, causing the wheels to shift inward.