



Park Rapids Legal Eagle

School kids build an ultralight

BY DAN GRUNLOH

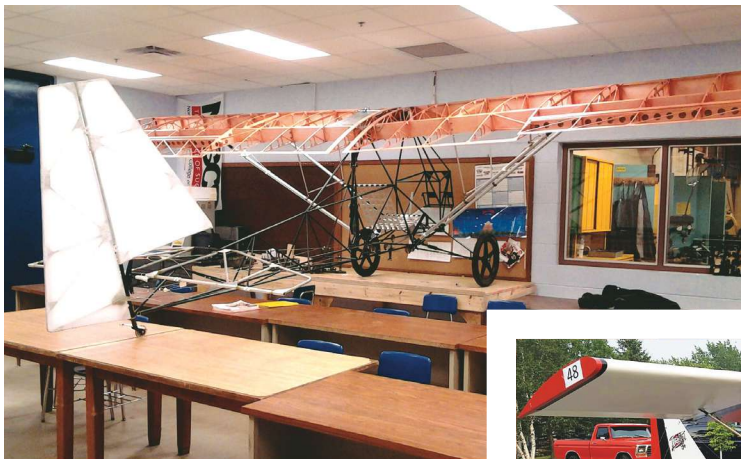
DENNY SLEEN, EAA 806427, of Park Rapids, Minnesota, always wanted to fly. His family had a lot of aviation roots, and he grew up with aviation at the dinner table. His father was in naval aviation and worked at Curtiss-Wright and Northwest Airlines as an engineer. Denny became seriously interested in flying in 2001 and began to follow sport aviation in the magazines. He joined EAA in 2006 and attended local EAA chapter meetings. Eventually he settled on the Legal Eagle ultralight as his ideal airplane in large part because it could be built at low cost.

Denny worked in the industry for 25 years but finally found his place as an industrial technology instructor at Park Rapids High School in Minnesota teaching welding, machining, CAD/CAM, electronics, and automotive engineering. It's a small school, but it has a wide variety of curricula and has two

industrial technology instructors on staff. Denny's counterpart covers woodworking and residential construction.

He worked at the Park Rapids airport FBO for three years before joining the teaching staff at the high school. The school administration allows him to teach an aviation course that includes aircraft construction, maintenance, and basic airmanship. The aviation class doesn't go into detail about regulations because young students aren't interested in that aspect, but it does cover different kinds of aviation activities like parachuting, wing-suit flying, and ultralights.

Above: Denny watches as a student practices wing rib construction.



Completed Legal Eagle airframe in the aviation classroom.

He wanted to share his interest in ultralights with his students and came up with a plan that would allow the high school students to build a Legal Eagle ultralight. Most schools don't want to own or operate an airplane so an extracurricular club was formed to build the ultralight. It was not part of his regular aviation class. One reason was because he wanted only those students truly interested in the project, not those who might be there simply to earn a class credit. The Legal Eagle was chosen because it incorporated a wide range of skills including welding, sheet metal, and woodworking. He thought the students might be inspired when they realized the airplane could be built for less than the cost of a snowmobile, which is something familiar to all the kids in his school.

The plans for the airplane were donated to the club by Legal Eagle designer Leonard Milholland who said he supports anything that gets kids interested in aviation. Denny purchased the materials so it is his airplane. The Legal Eagle is a low-cost ultralight with a conventional configuration that is designed to be powered with a half VW engine. With more than 2,500 plans sold, hundreds under construction, and at least 100 completed since it was introduced 17 years ago, the design is one of the top plans built ultralights of today.

Construction began in 2011 and took four years to complete with about 20 students working on the project. Freshmen who began work on the plane saw it fly by the time they graduated. All the work was done in the school facilities with the airplane occupying classroom space the entire time where all of his students could see the



The high school project ultralight in a parade.

progress and fuel their curiosity. Denny said even after the plane had been in the classroom for several years, students would still ask him what they were going to do with it when it was completed. They couldn't believe it was actually going to fly.

The airframe was completed and ready to fly for about \$4,000. He spent another \$2,000 on the 1/2 VW engine, but he could have done it for less because he used all new parts. It is a full case conversion like Leonard's, but he deviated in certain areas because he has easy access to machine shop facilities. The original engine plans are designed to minimize cost and to make things easy for the builder. Denny's engine is a dead-loss battery ignition system like most other Legal Eagles. The small battery will run the engine for a few hours, but it must be hooked up for a charge overnight. The Park Rapids Legal Eagle has been equipped with a 4-pound wind-driven generator to make it possible to fly longer cross-country flights.

Denny loves the airplane and says it is very predictable and so much fun. Cruise is 53 mph, climb is 53 mph, and approach is 53 mph. He has flown it for two summers totaling 32 hours. He earned a private pilot certificate several years ago and logged 66 hours in GA aircraft before flying the Legal Eagle, but still considers himself to be a novice.

Flying the Legal Eagle to AirVenture is on Denny's bucket list. The trip is 400 miles, and he plans to allow up to a week each way



Four Park Rapids aviation students with the Legal Eagle in its hangar.

avoiding flying in wind or weather. It should take two flying days each way at a minimum. The reality is that anything over six hours per day in a little airplane can be very tiring. Being a teacher, he has the advantage of free time in the summer.

Denny keeps the Legal Eagle at the local airport where it shares a hangar with a friend's J-3 Cub. He operates off the grass runway most of the time, but has begun using the pavement to get ready for a trip to Oshkosh. He has not had the confidence to fly below 500 feet, which is understandable as he says all they have in the Park Rapids area is trees and water. Emergency landings must be on roads, which of course have power lines.

In the beginning he had hoped that some of the kids would build their own airplane, but that hasn't happened yet. It may be too soon to expect it, but surely their experiences building the airplane will have changed them. Two years after its completion the project still provides inspiration when students see it flying around the area.

The Park Rapids High School aviation class is currently building a Bushcaddy as a non-flying project. The Canadian design is an all-aluminum two-place side-by-side tail-dragger. The fuselage is already assembled, and the students are now building the wings. If every high school had an instructor and a program such as this, personal aviation might be very different. **EAA**

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