



## Retooling the Standard School Desk

When Israeli industrial designers Arthur Brutter and Ido Bruno decided to rethink the standard school desk, little did they know that the result, their award-winning Earthquake Desk, would take on a life of its own.

An encounter with them last year in Sendai, Japan sparked our idea to introduce Earthquake Desks in Bhutan. Big earthquakes are a threat in this small Himalayan nation, but many schools are not yet earthquake resistant. Children have little protection in these schools if heavy roofs or stone walls collapse during shaking.

Unlike a standard school desk, the Earthquake Desk was designed to withstand a heavy load.

Until Bhutan can fix all of its vulnerable schools, why not equip them with sturdy desks? And why not make the desks locally to keep the cost low?

In a pilot project coordinated by our Bhutan office, carpenters, welders, and government engineers in Bhutan set to work learning from Ido and Arthur. A combination of structure and materials creates the Earthquake Desk's strength. If the team could produce affordable desks that meet design specifications, and that outperform current desks, then students, the Ministry of Education, and Bhutan's

small furniture industry would all come out winners.

No one said it would be easy. The team made a set of wooden jigs, which they used to precisely align steel pieces while welding. The method allows fabricators to make the same component repeatedly with little error. Each section has a corresponding jig, and one jig set can be used to make hundreds of desks.

Jigs were a new concept in Bhutan. Improvisation, on the other hand, is a practiced art. Inadequate tools were quickly adapted. And highly skilled carpenters helped Ido and Arthur devise improvements to the desktop, further enhanced by the excellent quality of Bhutan plywood.

*Above: Welders in Bhutan use wooden jigs to hold steel pieces in precise position. PHOTO: IDO BRUNO*

*Right: A Bhutan Earthquake Desk painted in one of 4 colors selected by the team. The painted top is a special edition for the pilot effort. PHOTO: APARAJITA ACHARYA*

"This was collaboration at its best," declared Ido.

They made an initial batch of 14 Earthquake Desks and capped the training with a "crush" test. A Bhutan-made Earthquake Desk withstood the drop of boulders and concrete weighing 930 pounds (the facility's maximum load), while a standard desk was flattened under a much lesser load.

The team's conclusion after a week of sawing, chiseling, welding and inspired troubleshooting was the local equivalent of "We're in!" in four languages. They realized that their work to build a better school desk may save lives, perhaps the lives of their own children.

Impressed by the jig system, the Ministry of Education will work with Arthur and Ido to initiate a similar system in Bhutan's Vocational Training Institutes and also train students to produce Earthquake Desks, which will ensure lower costs and sustainable production.

Next steps? Bhutan manufacturers will produce a larger supply, and the Ministry of Education will develop a phased plan to equip schools most at risk. Then Bhutan will have the skills and vision to sustain an Earthquake Desk program on its own.

The combination of earthquakes and poorly built schools poses a lethal threat to millions of children worldwide. The best way to protect these children is to replace or retrofit all vulnerable school buildings. But until that day they need safe cover. That's why we hope to introduce Earthquake Desks in more countries.

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