If We Can 3D Print Violins, Why Not Bows? Launching the < $10 Violin Bow

Syosset, NY – August 28th 2025 – Music education should be for everyone, yet for millions of students worldwide, the cost of instruments and bows remains out of reach.

The Problem

Despite progress in reducing instrument costs, bows have been left behind. High-quality bows often cost thousands of dollars and are usually made from an endangered Brazilian wood called Pernambuco which has caused a significant amount of sustainability and conservation issues.

Even the most inexpensive bows on the market are around $30 which is still far too expensive for many aspiring musicians in lower income communities.

The Solution

BowLab introduces a breakthrough: a modular, tension-balanced, 3D-printed bow designed to be affordable, replicable, and classroom-ready. Built with common materials and printers, this prototype reimagines the bow as an accessible tool that can be easily assembled with basic components, allowing for greater music education access for all.

Impact and KPIs:

1. **Cost:** Less than $10 in material
2. **~100g in weight**: comparable to traditional student bows.
3. **Build Time:** Under 24 hours from CAD to playable prototype

Quote from Founder

"As a violist and researcher who has worked with many students from impoverished neighborhoods, I've seen too many talented students held back by their equipment.

Looking online, I found many organizations focused on extremely inexpensive instruments from the Recycled Orchestra of Cateura to Hova Labs's 3-D printed violins. And so I thought: if we can print violins, why not bows? BowLab is about democratizing access to music, making sure every student has the chance to play with tools that inspire rather than limit.

I hope to expand BowLab's reach across multiple countries to further music education for all while continuing to research synthetic material alternatives that match the exceptional nature of Pernambuco".

Learn more at: **bowlab.site**

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Gallery (Photos of Design Process & Product) (For more details, see Engineering & User Guide)

A) B) C)

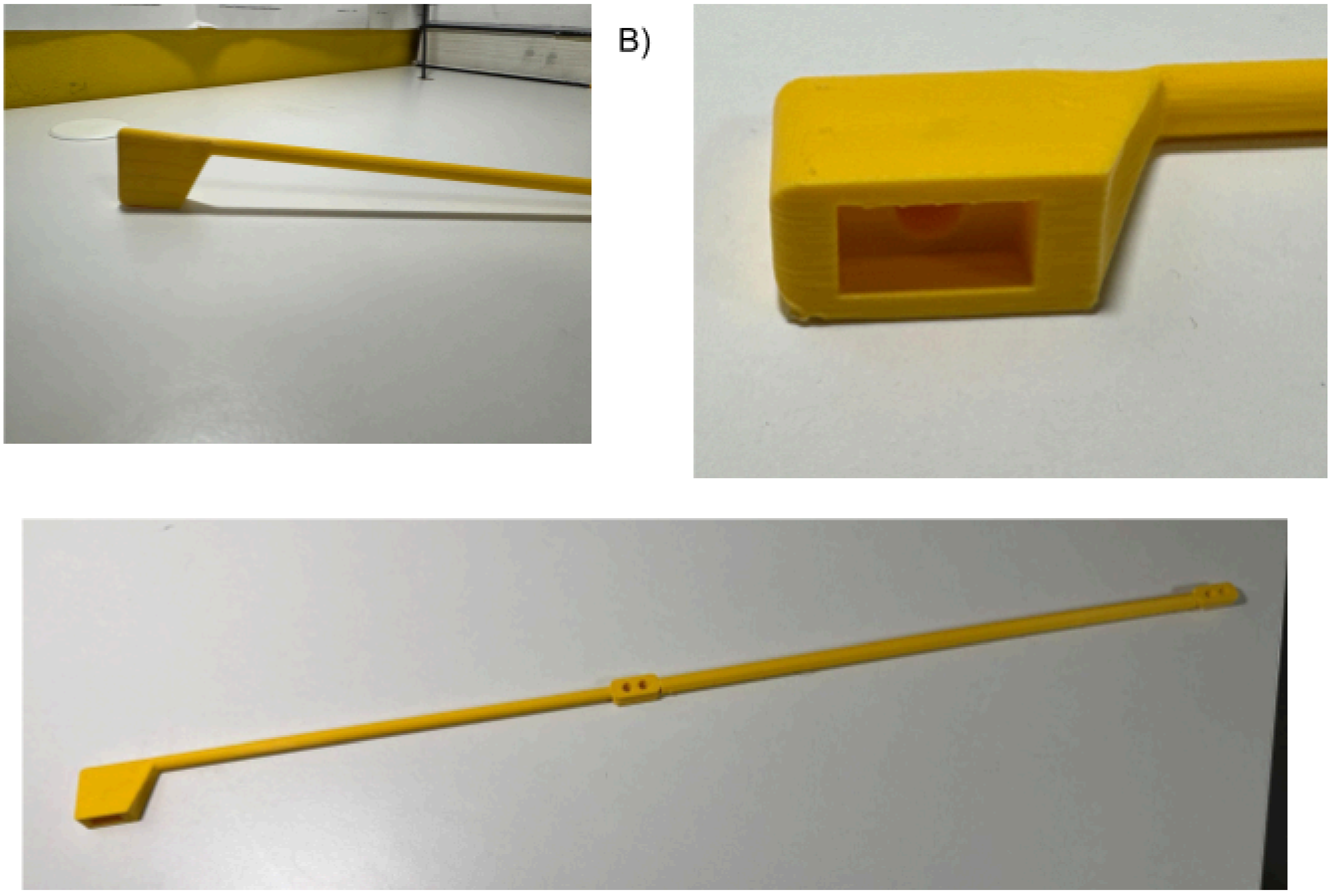
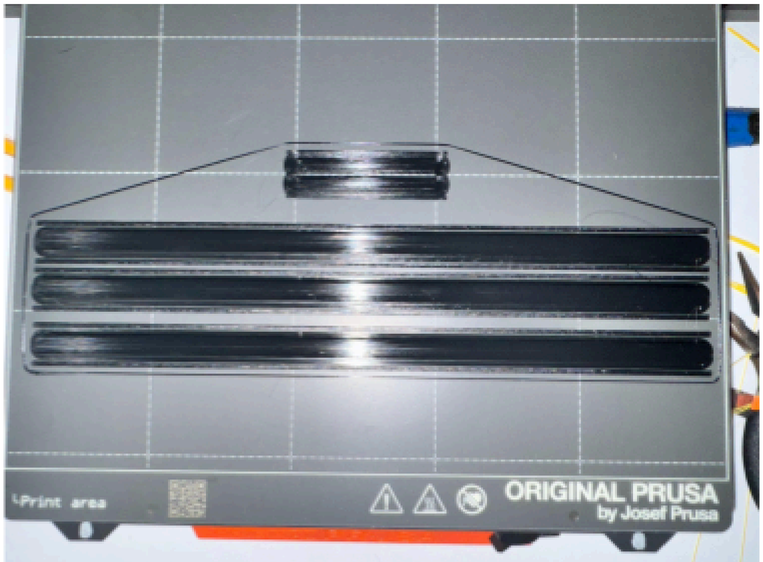


Fig 1 (A,B,C): Prototype V1. Followed standard Pernambuco bow design with insertions for connector points. The stick was too soft with a lack of rebound.

A)



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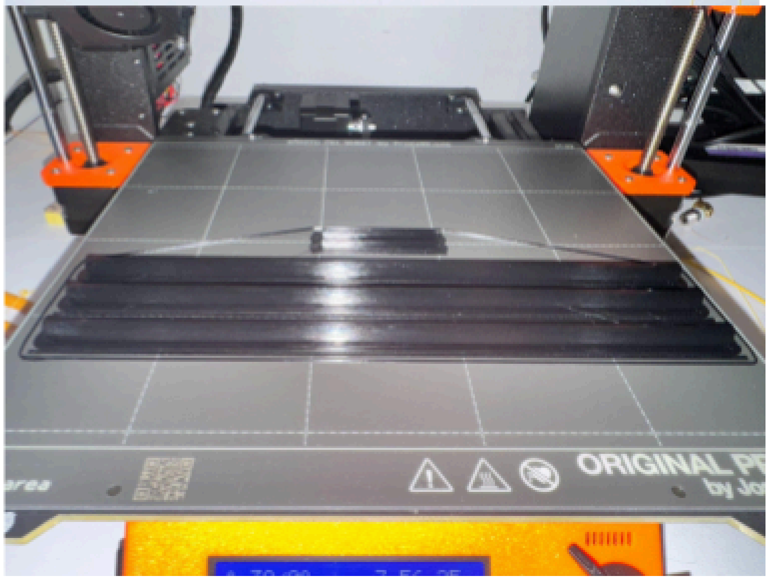

Fig 2 (A,B,C): Prototype V2. Used strong Nylon plastic with fiberglass wrapping and dowel connectors to try to improve rigidity and rebound. Although nylon made it stronger, the stick was still far too soft. Fiberglass wrappings with epoxy failed to improve rigidity.

Additionally, nylon PA plastic requires extremely low humidity and very high heat for printing. I had to cover my printer with jackets to maintain proper ambient air printing temperature (which was around 92F) (C.)

C)

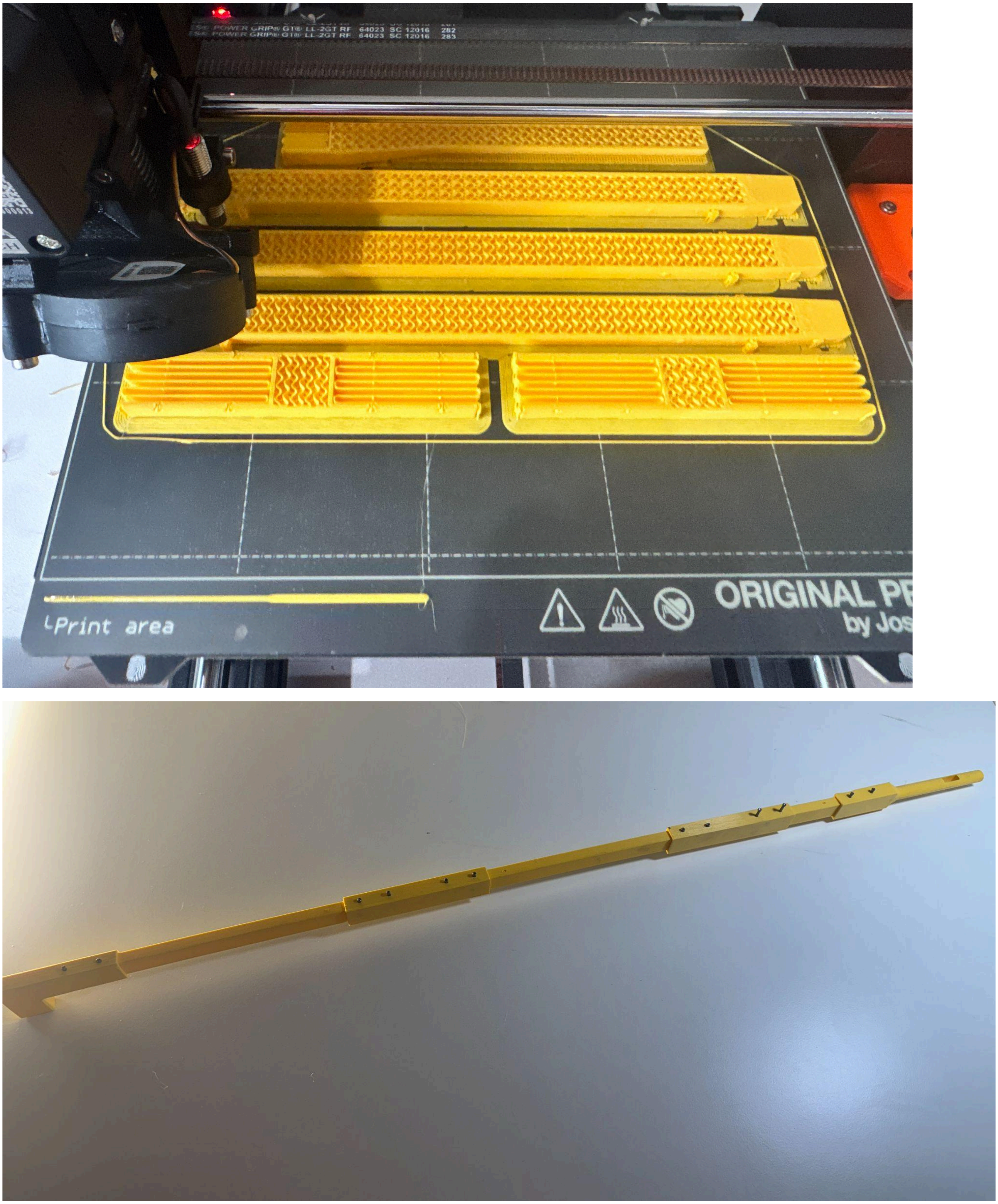

Fig 3: Prototype V3 printing in process. Larger, rectangular connectors using PLA plastic. Used nails for connectors instead of plastic components for greater durability.

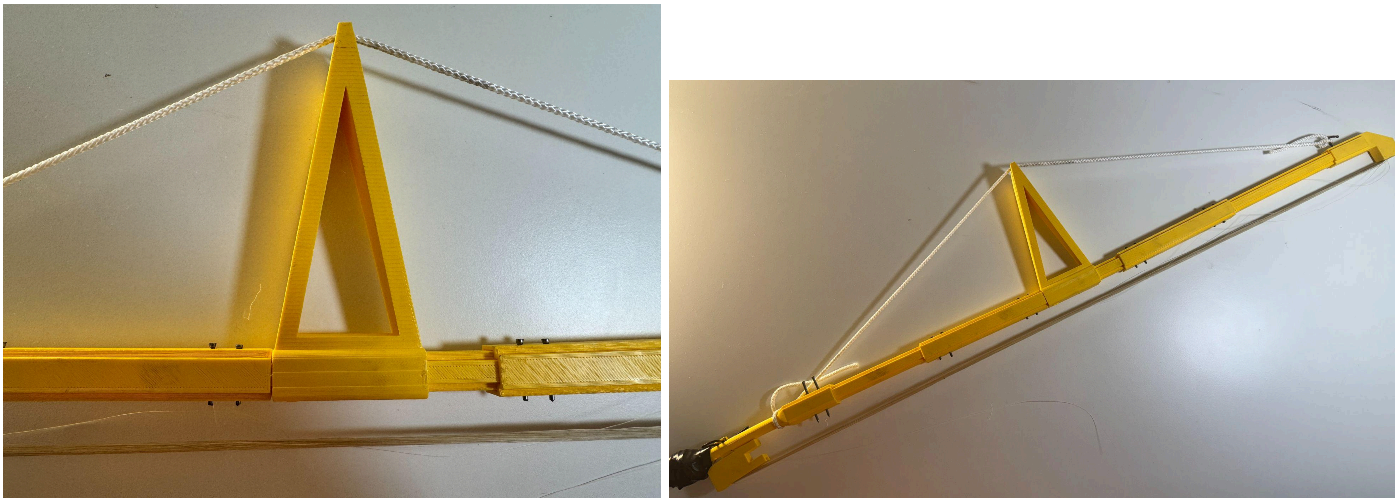

Fig 4: Prototype V4. cross-like shape to improve rigidity and prevent torsion forces from being plastic. Added strong support in the center to increase tension. Added counterweight to lower the center of mass.

CAD Images: