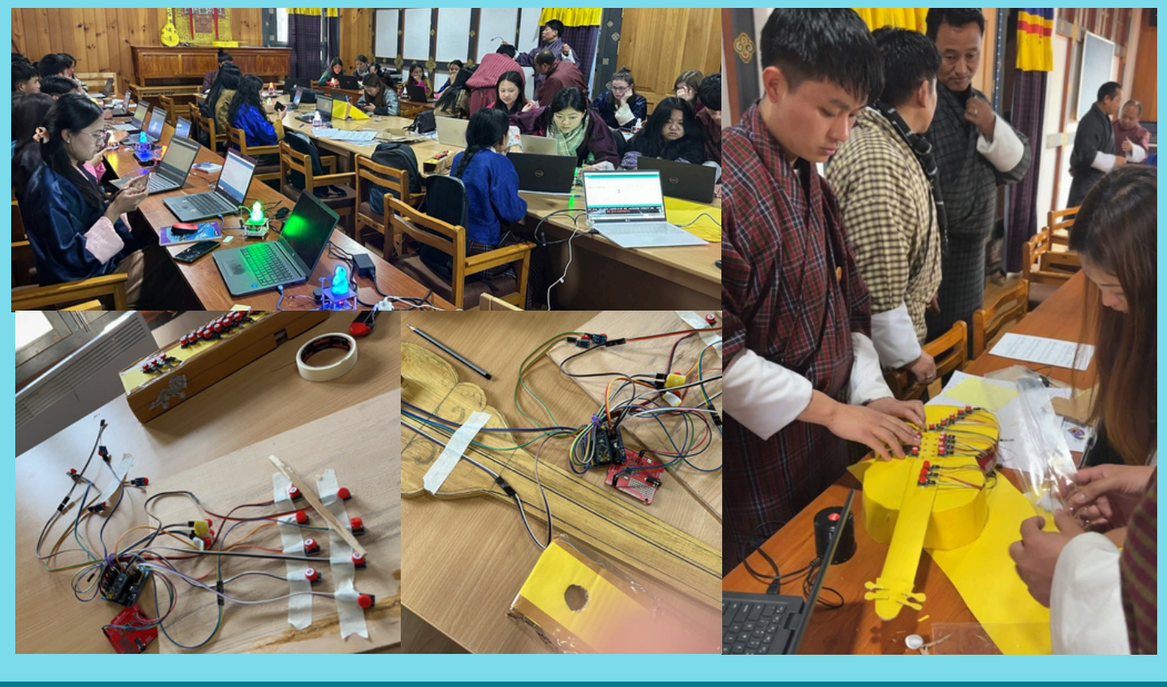
Threads and Strings:
Interweaving Bhutanese Traditional Music, Textiles and STEM

Som Gurung, Johan Westman, Tshering Dorji, Tashi Wangmo, Thinley Phuntsho and Ugyen Namdel
Paro College of Education, Royal University of Bhutan, Bhutan

The project aims to preserve and promote Bhutanese cultural heritage by integrating STEM education with traditional practices in music and textile arts, engaging students and faculty in hands-on activities that blend Arduino programming and STEM concepts with cultural crafts, enhancing their understanding of design-thinking, measurement, geometry, and sound, and empowering future educators to incorporate culturally rooted STEM approaches in their teaching for sustainable education in Bhutan.



Traditional Music & STEM Education

- Arduino programming to craft traditional musical instruments.
- Explored sound, pitch, rhythm, notations, and coding through hands-on learning.
- Encouraged deep understanding of the science of music and Bhutanese cultural expression.

Traditional Textile & STEM Education

- Applied geometry, measurement, colour theory, and loom design in weaving.
- Integrated design-thinking and creativity with technological approaches.
- Enhanced appreciation for traditional Bhutanese weaving through a STEM lens.

Student Engagement

- Participated in extracurricular hands-on activities that promoted active learning.
- The project provided cross-disciplinary learning experiences.
- Increased motivation and engagement through real-world, culture-based applications.

Impact & Outreach

- Showcased during the Annual STEM Festival—an outreach platform involving schools, academia, and industry.
- These initiatives help future teachers to cascade knowledge and preserve Bhutanese heritage.

The Heritage Education and Professional Development Centre (HEDPC) along with the STEM centre plays a key role in empowering future educators to integrate STEM to promote cultural sustainability.