

- **Harrison Bay Future Ready students incorporate sustainable bamboo PBL into hands-on learning by Schuyler Colquitt**

*How can we, as designers, provide temporary shelters from local products/supplies that are sustainable, renewable, and eco-friendly?* This was the driving question Harrison Bay Future Ready Center's, Karen Haynes, posed to her architecture and engineering design students last month.

The project-based learning (PBL) idea came into play as Haynes, a PEF STEM Fellow alumna, was creating a PBL unit focused on creation of temporary, sustainable housing. This renewable structure could serve as emergency shelter for people who have been displaced from natural disasters, such as hurricanes and other tropical storms. Students sketch the build, determine a materials list, create a building backstory and digital documentation of their process, and lastly, evaluate the structure. Haynes wanted her students to contemplate housing that is cost-effective, does not require many tools to construct, and brainstorm design solutions for an eco-friendly bamboo hut. The supplies portion was simple, as Haynes was able to cut down excess bamboo she had in her own yard and bring it to school.



Factors like durability and quick growth (some species growing as fast as three feet per day!) made bamboo a great option for sustainability. *“With bamboo degrading over time, you haven’t really done much to impact the environment,”* shared Haynes. *“You have a place where you feel protected from inclement weather and do not have to worry about insects.”* Other supplies, like drop cloths and zip ties, were also used during the build.

Students shared how the PBL has shaped their learning and thought process throughout the assignment. ***“For now, we’re building small sustainable structures,”*** shared freshman Natali D., ***“but this is also preparing us to create something bigger and better in the future.”*** Although Haynes’s students were part in-person, part virtual, that did not hinder their learning. ***“I focused on the research portion of the project, giving my in-person teammates the information they needed for construction,”*** shared virtual learning freshman Dennis T. ***“For those of us learning remotely, our research gave us the ability to contribute to the build.”*** Haynes shared she has enjoyed being able to witness the community this group of students has become throughout their learning experience.

With one structure already completed, three other builds are still in process. Haynes will have the same students in her class in January and plans to have them pick up where they left off to complete their project.



Students' fishing lure creations on sale at ACE Hardware (Brainerd Rd. location))

The eco-friendly structures are not the only projects getting attention at Harrison Bay. Last year, a couple of Haynes’s students wanted to try out different approaches to injection molding in order to create fishing lures. Partnering with Hamilton County School’s Grant Knowles, her students started a student-run business, with the goal to understand how a business model works. One of her students approached his manager at ACE Hardware to see if they could have a small space in the store to sell the fishing lures they created. After an enthusiastic yes from his boss, students also learned how to provide an invoice, how to price the items, and how to incorporate their own branding on each item. ***“To me, that’s a big win,”*** said Haynes. ***“Whether we make money or not, we have something that our kids have made that’s in the***

**store, and that's exciting.**" Haynes shared that their lures will be specific to the Tennessee River. Students are working with different color combinations to see what will work for specific fish in our environment.



A student run business at:  
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Logo design by Central High School student Aaron Thomas.

Haynes isn't the only Harrison Bay leader impacting innovative student learning. Their staff of less than twenty is dedicated to making Harrison Bay Future Ready Center a personable community, whether in a virtual or in-person environment. **"Every single person who works here is devoted to this school and making students successful,"** shared Haynes. To see more of the creative PBL units students and teachers are working on, visit the PBL/CTE tab on the Harrison Bay FRC [website](#).

*\*Photos contributed by Karen Haynes and Harrison Bay Future Ready Center.*