

The Arnold Sentinel

“Serving the South Loup River Valley”

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From the Greenhouse to the Cafeteria

Grow beds and aquaponics - Arnold School's greenhouse is in production

It's cold outside, but tomatoes and cucumbers have been growing like crazy in Arnold Public School's greenhouse. The peppers have been a little slower to grow, and not knowing if it was the lights or placement, students moved them to a different bed.

"We have been able to put some of the harvested material out on the school's salad bar, including one harvest of a specialty orange cauliflower which the elementary loved," said science teacher Melissa Sandager.

In addition to the above-mentioned, there's a variety of plants in the nine, 4x6 foot beds, including radishes, onions, cabbage, carrots, beets, and herbs - all headed to the lunch room's tables. And there's eight lick tubs filled with strawberry and blueberry plants for the school's morning yogurt bar.

Four extra large beds are designated as the "kids" beds. That's where applied science students are growing foods as a special project. At the start of the year, 18 students broke into four different groups and got to pick a different ethnicity that they wanted to learn about and cook a meal from. They then researched common

meals from that ethnicity and had to figure out what meals they wanted to make. From there, each group came up with a list of plants that they needed to grow in order to produce the food needed for their meals. Throughout the year, each group will get a whole morning to harvest and cook their ethnic meal. They will be cooking enough to feed their class, all the teachers, and invited school board members during lunch time.

"Besides protein and tree-based foods, students are only able to use materials that they grew in their meals. They are very excited to use the produce that they made, and I cannot wait to see them learn about new ethnicities. Some of the kids have never heard of, let alone tasted, some of the meals that they will be served," said Mrs. Sandager.

Aquaponics Up and Running

Aquaponics - a sustainable farming method that combines aquaculture and hydroponics to grow plants and fish together - was finally up and running in late fall of 2024. Students, Mrs. Sandager, and the shop class built their own custom aquaponics system that includes two, 300 gallon

tanks and a lettuce wall that can hold up to 150 lettuce plants. The fish were delivered, and while the system is going good now, Mrs. Sandager said it's been a real learning experience.

"First, we had to raise the whole tower as the sitting water level was above the lowest growing level, causing the thing to flood. Then when we got that figured out, we got our fish. It went well for a few days, but after that, the algae in the fish tanks went crazy!" she said.

While algae is a normal part of fish tanks, this tank is in a greenhouse with amplified light. This caused the algae to grow very quickly and within one to two days, the clear water was neon green. The students and their teacher had to figure out what to do. They didn't want to use traditional chemical means to fight the algae, as it could hurt the fish and plants, so they looked into alternate methods, trying three different things. Adding a copper block into the water didn't work, and adding sun shades to the water helped to keep new algae from growing, but wasn't helping to kill the current algae quickly enough. Their third method of using UV lights in the water to kill the algae got results, but the fish didn't fare well. Once the UV lights were installed, the algae cleared up within a day, but unfortunately so did all the fish.

"We weren't sure what killed them - the high algae water or the UV, so I went and got some cheap goldfish and put some in a tank with the UV light and some in the tank without, and by the next day all the



Realta Leach harvests from the aquaponics lettuce wall located in Arnold School's greenhouse. The aquaponics wall, which can hold up to 150 lettuce plants, was custom built at the school. - Courtesy photo

fish in the UV tank were dead. So we found our culprit. While the UV worked great for the algae problem, it harmed our fish," said Mrs. Sandager.

With that lesson learned, the idea of putting the UV sticks in the filter tank, exposing the water but not the fish, worked.

"We are now good to go!" said Mrs. Sandager.

"We have about 30 happy goldfish living in our tanks. Once spring hits, we hope to get more of the traditional aquaponics fish - bluegill, catfish, and perch - back into the tanks. While it was frustrating at the time, it was a great learning experience for the kids and I, and it really showed them the scientific method in

real life. Thanks to Ron Cool for donating to help fund this project."

This spring, Mrs. Sandager and her students are planning on having an open greenhouse to invite the community members to come and see what the kids have been doing. A date will be determined at a later time.

New Officers Ready for Year Ahead

Dena Mills was elected to serve as Arnold Chamber's president in 2025 at a reorganizational meeting held on January 27. Mills, who was last year's vice-president, will take over for April Tickle, who has served as president for several years. Taylour Snyder is the organization's newest officer, filling the role of vice-president. Tammy Weinman will once again serve as secretary, and Becky Dai-

ley will remain treasurer. Others attending the reorganizational meeting were Tiff Varney, Macy Koubek, Barb Gunther, Aaron Coleman, Cheryl Carson, Jodi Carlson, and junior member Piper Strasburg.

Members discussed several items: The AEDC's 2024 Holiday Edition Passport Program was noted to be a success, bringing in extra business, and partici-

pants thought it was a fun event. Members thanked Cheryl Carson and the AEDC for doing the project.

One-hundred-twenty candy canes were handed out at Christmas Around Town, and the hay rack ride was a big hit. Chamber will be looking at getting food trucks for the event in 2025.

The Chili Cook-Off will be held on Saturday, March 1. Taylour Snyder

and Debbie Connelly are co-chairing the event. Macy Koubek will be chairperson for the Easter Egg Hunt on Saturday, April 12.

Community Clean-Up Day will be held on Monday, April 28, and the rain date will be May 5. Legion has volunteered to do the meal that day.

Cheryl Carson presented

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Discussion on School Facility Design Continues

The Arnold School Board held a special meeting on January 27 to discuss facility needs and potential construction design. All board members, the superintendent, two representatives of Hausmann Construction, and about a dozen community members were in attendance.

Jacob Sertich, architect with Wilkins Architecture, Design and Planning, suggested at a prior meeting for each board member to compile a list of their top priorities for the floor plan.

The meeting opened with a presentation from Steve Thiele, executive vice president, and Ashley Abramson, director of marketing, of Hausmann Construction. Ninety percent of Hausmann Construction's projects are working with K-12 schools. Thiele and Abramson informed the board of some of the "Dos" when trying to get a bond to pass. Those included focusing on basic facility needs, community involvement, and educating with facts. Using Broken Bow as an example, they stated that the big differences they noticed between their first bond that failed and the second bond that passed was getting the community involved and turning gears more towards renovation rather than new build.

Board President Duane

Bowers then addressed the community members who were in attendance, informing them about recent developments or news that they might have missed, essentially bringing them up to speed on the situation. He stated that the 1925 building is uninsurable and then went on to explain that the 1925 building would need extensive renovation to be able to insure. Questions and comments were not received at that time, but will be at future community engagement meetings.

Board members then bounced ideas off of each other. A few of their main priorities were getting the preschool located in the school, centralizing the library/media center, getting the science room located near the greenhouse, creating a space for contracted services, and having the activity and main entrance become one on the east side of the school. They also addressed parking and how to maximize it. The bus drop-off would remain on the east side and angle parking along the east side could be created.

Superintendent Joel Morgan concluded the meeting with saying he would get the suggestions over to Wilkins, as well as ask about natural light concerns with classrooms located on the west side.



(From left) Becky Dailey, Dena Mills, Taylour Snyder, and Tammy Weinman stepped up to serve as Chamber officers for 2025 at a reorganizational meeting held on January 27. - Debbie Connelly photo